

ROM Kernel Manual Volume 2

Appendix A

Routine Summaries

This appendix contains Unix-like summaries for the routines that are built into the Amiga ROM (or kickstart) software, as well as summaries of routines in disk-loadable libraries. The debug library documentation is included here as well.

These documentation files are organized on a functional basis. For example, things pertinent to Exec are listed under "exec.library/someDocFile". Things pertinent to graphics are listed under "graphics.library/someDocFile".

The tutorial sections of this manual give you information that shows how these routines relate to each other and the prerequisites for calling them.

Most routines are listed as part of a library of routines. Before you can use a routine within your program, you must assure that the library is opened. This is explained fully in the "Libraries" chapter of this manual but it bears repeating here. You open a library by using the **OpenLibrary()** function. The call takes the form:

```
struct LibBase *LibBase;
LibBase = OpenLibrary("library.name", version):
```

where:

library.name

is a string that describes the name of the library you wish to open.

version

is the version number of the library that you wish to have opened. A value of 0 says give me any version. A value of 31, for example (latest as of this writing) says open specifically version 31 of this library or greater if 31 is not available.

If the library is disk-resident, it gets loaded and initialized. The **OpenLibrary()** returns the address of the library base, which you must assign to a specific variable. It is through this means that your program links into the library-specific interface code that is contained in amiga.lib.

The following is a list of the names of the libraries that are currently part of the Amiga software and the corresponding names of the library base pointers associated with them:

| Library Name | Library Base Pointer Name |
|--------------|---------------------------|
| | |

exec.library ExecBase clist.library ClistBase graphics.library **GfxBase** layers.library LaversBase intuition.library **IntuitionBase** Math Base mathffp.library mathtrans.library MathTransBase mathieeedoubbas.library MathleeeDoubBasBase dos.library DosBase translator.library TranslatorBase icon.library **IconBase**

diskfont.library DiskfontBase

ramlib.library

(not useful to C language)

Example:

```
#include "graphics/gfx.h"
struct GfxBase *GfxBase;
GfxBase = OpenLibrary("graphics.library",0);
if(GfxBase == NULL) exit(NO_GRAPHICS_LIBRARY_FOUND);
```

Note:

If your program is coming up through the normal startup code (see the Workbench chapter of this manual) the exec.library and dos.library are already opened for you. Thus you needn't open them yourself.

The reason for this code are

1. C, when calling a routine, takes the parameters for the routine and pushes them. onto the stack. For example:

```
x = Routine(parmA, parmB);
```

Then it calls a routine named "_Routine" (adds an underscore to the head of the routine name).

2. The underlying ROM (or disk based) code usually expects its parameters to be passed in registers rather than on the stack. This is to make it truely general purpose (does not impose a particular stack frame), and more efficient for assembly language coding.

Therefore, the interface code at _Routine, in turn, saves the contents of registers the routine will use and pulls parameters off of the stack and jams them into registers, finally passing control directly to the actual starting location of the routine itself.

The linker needs the library base location since it is through a jump-with-offset from a machine register that the _Routine entry point is found. (The Amiga uses a relocating loader in AmigaDOS, so you can never be sure exactly where a library of routines is located. However once the system has loaded a library, it knows how and where to find it and gives you a way to use the library's routines.)

The following shows typical interface code linked to your program from amiga.lib:

```
xref _LibBase
                              ;Library base name is defined in
                              ;user's file, this code gets linked
                              ;to user's program, get the value
                              from there when library is opened.
           xdef _Routine
                              ;make _Routine name external,
                              ; visible to linker.
_Routine:
           move.l
                      A6,-(sp)
                                         ;save register(s)
           move.l
                      8(sp),A0/A1
                                         copy parms A and B to regs.
           move.l
                      _LibBase,A6
                                         ; load library base address
           isr
                      _LVORoutine(A6);go to real routine
           move.l
                      (sp)+,A6
                                         restore registers;
           rts
```

where _LVORoutine is a value representing the offset, within the library, at which the "real" routine (the one that expects parameters in registers) is located.

When you are finished using a library, at the end of your program, you should close it, using the CloseLibrary function as follows:

CloseLibrary(LibBase);

If the system is running out of memory and needs to free up space, it can check the library-accessors field for various libraries and for those whose accessors value is zero, it can retrieve the memory that the library had used.

| abs | mathffp library |
|-----------------|-----------------------------------|
| AddAnimOb | graphics library[gels] |
| AddBob | graphics library[gels] |
| AddDevice | exec library |
| AddFont | graphics library[text] |
| AddFreeList | icon library |
| AddGadget | intuition library |
| AddHead | exec library |
| AddIntServer | exec library |
| AddLibrary | exec library |
| AddPort | exec library |
| AddResource | exec library |
| AddTail | exec library |
| AddTask | exec library |
| AddVSprite | graphics library[gels] |
| Allocate | exec library |
| AllocCList | clist library |
| AllocEntry | exec library |
| AllocMem | exec library |
| AllocRaster | graphics library |
| AllocRemember | intuition library |
| AllocSignal | exec library |
| AllocTrap | exec library |
| AllocWBObject | icon library |
| AndRectRegion | graphics library |
| Animate | graphics library[gels] |
| AreaDraw | graphics library |
| AreaEnd | graphics library |
| AreaMove | graphics library |
| arnd | mathlink_lib library |
| AskFont | <pre>graphics library[text]</pre> |
| AskSoftStyle | <pre>graphics library[text]</pre> |
| AutoRequest | intuition library |
| AvailFonts | diskfont library |
| AvailMem | exec library |
| BeginRefresh | intuition library |
| BeginUpdate | layers library |
| BehindLayer | layers library |
| BltBitMap | <pre>graphics library[text]</pre> |
| BltClear | graphics library |
| BltPattern | graphics library |
| BltTemplate | <pre>graphics library[text]</pre> |
| BuildSysRequest | intuition library |
| BumpRevision | icon library |
| Cause | exec library |
| CEND | graphics library |
| ChangeSprite | graphics library |
| CheckIO CheckIO | exec library |
| CINIT | graphics library |
| ClearDMRequest | intuition library |
| ClearEOL | <pre>graphics library[text]</pre> |
| ClearMenuStrip | intuition library |
| ClearPointer | intuition library |
| ClearRegion | graphics library |
| ClearScreen | <pre>graphics library[text]</pre> |
| Close | dos library |

| Close | translator library |
|--------------------|------------------------|
| CloseDevice | exec library |
| CloseFont | graphics library[text] |
| CloseLibrary | exec library |
| CloseScreen | intuition library |
| CloseWindow | intuition library |
| CloseWorkBench | intuition library |
| CMOVE | graphics library |
| ColdReset | exec library |
| ConcatCList | clist library |
| CopyCList | clist library |
| CopySBitMap | graphics library |
| CreateBehindLayer | layers library |
| CreateDir | dos library |
| CreatePort | exec_support library |
| CreateProc | dos library |
| CreateStdI0 | exec_support library |
| CreateTask | exec_support library |
| CreateUpfrontLayer | layers library |
| CurrentDir | dos library |
| CurrentTime | intuition library |
| CWAIT | graphics library |
| DateStamp | dos library |
| dbf | mathlink_lib library |
| Deallocate | exec library |
| Delay | dos library |
| DeleteFile | dos library |
| DeleteLayer | layers library |
| DeletePort | exec_support library |
| DeleteStdIO | exec_support library |
| DeleteTask | exec_support library |
| DeviceProc | dos library |
| DisownBlitter | graphics library |
| DisplayAlert | intuition library |
| DisplayBeep | intuition library |
| DisposeLayerInfo | layers library |
| DisposeRegion | graphics library |
| DoCollision | graphics library[gels] |
| DoIO | exec library |
| DoubleClick | intuition library |
| Draw | graphics library |
| DrawBorder | intuition library |
| DrawGList | graphics library[gels] |
| DrawImage | intuition library |
| DupLock | dos library |
| EndRefresh | intuition library |
| EndRequest | intuition library |
| EndUpdate | layers library |
| Enqueue | exec library |
| Examine | dos library |
| execute | dos library |
| Exit | dos library |
| ExNext | dos library |
| faddi | mathffp library |
| FattenLayerInfo | layers library |
| fcmpi | mathffp library |
| | |

| fdivi | mathffp library |
|-----------------------|------------------------|
| fflti | mathffp library |
| FindName | exec library |
| FindPort | exec library |
| FindTask | exec library |
| FindToolType | icon library |
| Flood | graphics library |
| FlushCList | clist library |
| fmuli | mathffp library |
| fnegi | mathffp library |
| fpa | mathlink_lib library |
| fpbcd | mathlink_lib library |
| FreeCList | clist library |
| FreeColorMap | graphics library |
| FreeCopList | graphics library |
| FreeCprList | graphics library |
| FreeDiskObject | icon library |
| FreeEntry | exec library |
| FreeFreeList | icon library |
| FreeCBuffers | graphics library[gels] |
| FreeMem | exec library |
| FreeRaster | graphics library |
| FreeRemember | intuition library |
| FreeSignal | exec library |
| FreeSprite | graphics library |
| <u>FreeSysRequest</u> | intuition library |
| FreeTrap | exec library |
| FreeVPortCopLists | graphics library |
| FreeWBObject | icon library |
| fsubi | mathffp library |
| ftsti | mathffp library |
| GetCC | exec library |
| GetCLBuf | clist library |
| GetCLChar | clist library |
| GetCLWord | clist library |
| GetColorMap | graphics library |
| GetDefPrefs | intuition library |
| GetDiskObject | icon librar |
| GetGBuffers | graphics library[gels] |
| GetIcon | icon librar |
| GetMsg | exec library |
| GetPrefs | intuition library |
| GetRGB4 | graphics library |
| GetSprite | graphics library |
| GetWBObject | icon librar |
| IEEEDPAbs | mathieeedoubbas librar |
| IEEEDPAdd | mathieeedoubbas librar |
| IEEEDPCmp | mathieeedoubbas librar |
| IEEEDPDiv | mathieeedoubbas librar |
| IEEEDPF1t | mathieeedoubbas librar |
| I EEEDPMul | mathieeedoubbas librar |
| IEEEDPNeg | mathieeedoubbas librar |
| IEEEDPSub | mathieeedoubbas librar |
| IEEEDPTst | mathieeedoubbas librar |
| IncrCLMark | clist librar |
| Info | dos librar |
| | |

| InitArea | graphics library |
|--------------------|------------------------|
| InitBitMap | graphics library |
| InitCLPool | clist library |
| InitGels | graphics library[gels] |
| InitGMasks | graphics library[gels] |
| InitLayers | layers library |
| InitMasks | graphics library[gels] |
| InitRastPort | graphics library |
| InitRequester | intuition library |
| InitStruct | exec library |
| InitTmpRas | graphics library |
| InitView | graphics library |
| InitVPort | graphics library |
| Input | dos library |
| Insert | exec library |
| IntuiTextLength | intuition library |
| IoErr | dos library |
| IsInteractive | dos library |
| ItemAddress | intuition library |
| LoadRGB4 | graphics library |
| LoadSeg | dos library |
| LoadView | graphics library |
| Lock | dos library |
| LockLayer | layers library |
| LockLayerInfo | layers library |
| LockLayerRom | graphics library |
| LockLayers | layers library |
| MakeLibrary | exec library |
| MakeScreen | intuition library |
| MakeVPort | graphics library |
| MarkCList | clist library |
| MatchToolValue | icon library |
| ModifyIDCMP | intuition library |
| ModifyProp | intuition library |
| Move | graphics library |
| MoveLayer | layers library |
| MoveLayerInFrontOf | layers library |
| MoveScreen | intuition library |
| MoveSprite | graphics library |
| MoveWindow | intuition library |
| MrgCop | graphics library |
| NewLayerInfo | layers library |
| NewList | exec_support library |
| NewRegion | graphics library |
| OffGadget | intuition library |
| OffMenu | intuition library |
| OnGadget | intuition library |
| OnMenu | intuition library |
| Open | dos library |
| 0pen | translator library |
| OpenDevice | exec library |
| OpenDiskFont | diskfont library |
| OpenFont | graphics library[text] |
| OpenLibrary | exec library |
| OpenResource | exec library |
| OpenScreen | intuition library |
| -1 | THEOTETON ITDEATY |

| OpenWindow | intuition library |
|----------------|------------------------|
| OpenWorkBench | intuition library |
| OrRectRegion | graphics library |
| Output | dos library |
| OwnBlitter | graphics library |
| ParentDir | dos library |
| PeekCLMark | clist library |
| PolyDraw | graphics library |
| PrintIText | intuition library |
| PutCLBuf | clist library |
| PutCLChar | clist library |
| PutCLWord | clist library |
| PutDiskObject | icon library |
| PutIcon | icon library |
| PutMsg | exec library |
| PutWBObject | icon library |
| QBlit | graphics library |
| QBSBlit | graphics library |
| Read | dos library |
| ReadPixel | graphics library |
| RectFill | graphics library |
| RefreshGadgets | intuition library |
| RemakeDisplay | intuition library |
| RemDevice | exec library |
| RemFont | graphics library[text] |
| RemHead | exec library |
| RemIBob | graphics library[gels] |
| RemIntServer | exec library |
| RemLibrary | exec library |
| Remove | exec library |
| RemoveGadget | intuition library |
| RemPort | exec library |
| RemResource | exec library |
| RemTail | exec library |
| RemTask | exec library |
| RemVSprite | graphics library[gels] |
| Rename | dos library |
| ReplyMsg | exec library |
| ReportMouse | intuition library |
| Request | intuition library |
| RethinkDisplay | intuition library |
| ScreenToBack | intuition library |
| ScreenToFront | intuition library |
| ScrollLayer | layers library |
| ScrollRaster | graphics library |
| ScrollVPort | graphics library |
| Seek | dos library |
| SendI0 | exec library |
| SetAPen | graphics library |
| SetBPen | graphics library |
| SetCollision | graphics library[gels] |
| SetComment | dos library |
| SetDMRequest | intuition library |
| SetDrMd | graphics library |
| SetExcept | exec library |
| SetFont | graphics library[text] |
| | J J [00x 0] |

| SetFunction | exec library |
|--------------------------|------------------------------------|
| SetIntVector | exec library |
| SetMenuStrip | intuition library |
| SetPointer | intuition library |
| SetProtection | dos library |
| SetRast | graphics library |
| SetRGB4 | graphics library |
| SetSignal | exec library |
| SetSoftStyle | graphics library[text] |
| SetSR | exec library |
| SetTaskPri | exec library |
| SetWindowTitles | intuition library |
| ShowTitle | intuition library |
| Signal | exec library |
| SizeClist | clist library |
| SizeLayer SizeWindow | layers library |
| | intuition library |
| SortGList SPAbs | graphics library[gels] |
| SPAcos | mathffp library |
| SPAdd | mathtrans library |
| SPAsin | mathffp library |
| SPAtan | mathtrans library |
| SPCmp | mathtrans library |
| SPCos | mathffp library |
| SPCosh | mathtrans library |
| SPDiv | mathtrans library |
| SPExp | mathffp library |
| SPFieee | mathtrans library |
| SPF1t | mathtrans library |
| SplitCList | mathffp library |
| SPLog | clist library mathtrans library |
| SPLog10 | mathtrans library |
| SPMul | mathffp library |
| SPNeg | mathffp library |
| SPPow | mathtrans library |
| SPSin | mathtrans library |
| SPSincos | mathtrans library |
| SPSinh | mathtrans library |
| SPSqrt | mathtrans library |
| SPSub | mathffp library |
| SPTanh | mathtrans library |
| SPTieee | mathtrans library |
| SPTst | mathffp library |
| SubCList | clist library |
| SumLibrary | exec library |
| SuperState | exec library |
| SwapBitsRastPortClipRect | layers library |
| SyncSBitMap | graphics library |
| tan | mathtrans library |
| Text | graphics library[text] |
| TextLength | graphics library[text] |
| ThinLayerInfo | layers library |
| Translate | translator library |
| UnGetCLChar | clist library |
| UnGetCLWord | clist library |
| | orrec ribial A |

| UnLoadSeg | dos | library |
|-----------------|-----------|---------|
| UnLock | dos | library |
| UnlockLayer | | library |
| UnlockLayerInfo | | library |
| UnlockLayerRom | graphics | library |
| UnlockLayers | | library |
| UnPutCLChar | clist | library |
| UnPutCLWord | clist | library |
| UpfrontLayer | | library |
| UserState | exec | library |
| VBeamPos | graphics | library |
| ViewAddress | intuition | |
| ViewPortAddress | intuition | |
| Wait | | library |
| WaitBlit | graphics | |
| WaitBOVP | graphics | |
| WaitForChar | | library |
| WaitIO | | library |
| WaitPort | | library |
| WaitTOF | graphics | |
| WBenchToBack | intuition | |
| WBenchToFront | intuition | |
| WhichLayer | | library |
| WindowLimits | intuition | |
| WindowToBack | intuition | |
| WindowToFront | intuition | |
| Write | | library |
| WritePixel | graphics | |
| XorRectRegion | graphics | |
| | | - |

| ABS | clib macro[macros.h] |
|-------------|-------------------------------|
| abs | lattice macro[stdio.h] |
| BNDRYOFF | graphics macro[gfxmacros.h] |
| CEND | graphics macro[gfxmacros.h] |
| CINIT | graphics macro[gfxmacros.h] |
| clearerr | lattice macro[stdio.h] |
| CMOVE | graphics macro[gfxmacros.h] |
| CWAIT | graphics macro[gfxmacros.h] |
| feof | lattice macro[stdio.h] |
| ferror | lattice macro[stdio.h] |
| fflush | lattice macro[stdio.h] |
| fileno | lattice macro[stdio.h] |
| FOREVER | intuition macro[intuition.h] |
| getc | lattice macro[stdio.h] |
| getchar | lattice macro[stdio.h] |
| InitAnimate | graphics macro[gels.h] |
| isalnum | lattice macro[ctype.h] |
| isalpha | |
| isascii | lattice macro[ctype.h] |
| iscntrl | lattice macro[ctype.h] |
| | lattice macro[ctype.h] |
| iscsym | lattice macro[ctype.h] |
| iscsymf | lattice macro[ctype.h] |
| isdigit | lattice macro[ctype.h] |
| isgraph | lattice macro[ctype.h] |
| islower | lattice macro[ctype.h] |
| isprint | lattice macro[ctype.h] |
| ispunct | lattice macro[ctype.h] |
| isspace | lattice macro[ctype.h] |
| isupper | lattice macro[ctype.h] |
| isxdigit | lattice macro[ctype.h] |
| ITEMNUM | intuition macro[intuition.h] |
| MAX | clib macro[macros.h] |
| max | lattice macro[stdio.h] |
| MENUNUM | intuition macro[intuition.h] |
| MIN | clib macro[macros.h] |
| min | lattice macro[stdio.h] |
| NOT | intuition macro[intuition.h] |
| ObjAlloc | workbench macro[workbench.h] |
| putc | lattice macro[stdio.h] |
| putchar | lattice macro[stdio.h] |
| RASSIZE | graphics macro[gfx.h] |
| RemBob | graphics macro[gels.h] |
| rewind | lattice macro[stdio.h] |
| SetAfPt | graphics macro[gfxmacros.h] |
| SetDrPt | graphics macro[gfxmacros.h] |
| SetOPen | graphics macro[gfxmacros.h] |
| SetWrMsk | graphics macro[gfxmacros.h] |
| SHIFTITEM | intuition macro[intuition.h] |
| SHIFTMENU | intuition macro[intuition.h] |
| SHIFTSUB | intuition macro[intuition.h] |
| SIGN | intuition macro[intuition.h] |
| | workbench macro [workbench.h] |
| STREQ | intuition macro[intuition.h] |
| SUBNUM | workbench macro [workbench.h] |
| TMAlloc | |
| toascii | lattice macro[ctype.h] |
| TOBB | graphics macro[gfx.h] |

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tolower toupper

lattice macro[ctype.h]
lattice macro[ctype.h]

4 09:39 1985 Assembler.Math.Doc Page D0 - floating point number ARG, DO LVOSPAbs, A0 MathBase, A0 mathffp.llbrary/_LVOSPAbs 8 said number abs, SPAbs MOVE.L LEA ADD.L JSR SYNOPSIS None FUNCTION SEE ALSO INPUTS RESULT 200 NAME SSS 4 09:39 1985 Assembler.Math.Doc Page 1 mathifp. 11brary/_LNSFPAdd
mathieeedoubbas. 11brary/_LNOIEEEDRAbs
mathieeedoubbas. 11brary/_LNOIEEEDRAdd
mathieeedoubbas. 11brary/_LNOIEEEDRAdd
mathieeedoubbas. 11brary/_LNOIEEEDRIN
mathieeedoubbas. 11brary/_LNOIEEEDRIN
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mathieeedoubbas. 11brary/_LNOIEEERRIN
mathieeeoubbas. 11brary/_LNOIEEERRIN
mathieeeoubbas. 11brary/_LNOIEEERRIN mathtrans.library/LVOSPLog10 mathtrans.library/LVOSPPow mathtrans.library/LVOSPSin mathtrans.library/LVOSPSincos mathtrans.library/_LWCSPExp mathtrans.library/_LWCSPFieee mathtrans.library/LVOSPT1606 mathtrans.library/_LVOSPAsin mathtrans.library/_LVOSPAtan mathtrans.library/_LVOSPCos mathtrans.library/_LVOSPCosh mathtrans.library/_LVOSPAcos mathtrans.library/LWGPSinh mathtrans.library/_LVOSPLog mathffp.11brary/_LNGSPGup mathffp.11brary/_LNGSPD1v mathffp.11brary/_LNGSPE1x mathffp.11brary/_LNGSPF1t mathffp.11brary/_LNGSPM1 mathffp.11brary/_LNGSPM1 mathffp.11brary/_LNGSPM1 mathffp.llbrary/LWGPTst TABLE OF CONTENTS - A-1 -

Accepts a floating point number and returns the absolute value of abs - obtain the absolute value of the fast floating point number D0 - floating point absolute value of input register (D0)

mathffp.11brary/LVOSPAbs

```
Dec 4 09:39 1985 Assembler.Math.Doc Page 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               fdivi, SPDiv
                                                                                                                                                         MOVE.L
MOVE.L
LEA
ADD.L
JSR
                                                                                                                               SYNOPSIS
                                                                                                                                                                                                                                   FUNCTION
                                                                                                                                                                                                                                                                                                                                                                                                                                             None
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEE ALSO
                                                                                                                                                                                                                                                                                                  INPUTS
                                                                                                                                                                                                                                                                                                                                                                 RESULT
                                                                            NAME
                                                                                                                                                                                                                                                                                                                                                                                                                  BUCS
                                                   mathffp.llbrary/LVOSPOmp
                                                                                                                                                                                                                                                                       Accepts two floating point numbers and returns the condition codes set to indicate the result of said comparison
                                                                                                     LVOGPORP - compares two floating point numbers and sets appropriate condition codes
                                                                                                                                                                                                                                                                                                                                                                                                                 Condition codes set to reflect the following branches:
Dec 4 09:39 1985 Assembler.Math.Doc Page 3
                                                                                                                                                                                                                                                                                                                                                    (arg 1)
(arg 2)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   . => arg1 > arg2
. => arg1 < arg2
. => arg1 = arg2
                                                                                                                                                                                                                                                                                                                                                 D1 - floating point number
D0 - floating point number
                                                                                                                                                                                                                                                                                                                                                                                                                                         GT - arg 2 > arg 1
GZ - arg 2 >= arg 1
EQ - arg 2 == arg 1
NE - arg 2 != arg 1
LT - arg 2 <= arg 1
LR - arg 2 <= arg 1
                                                   mathffp.llbrary/_LVOSPCmp
                                                                                                                                                                  ARG1, D0
ARG2, D1
LVOSPCmp, A0
MathBase, A0
(A0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   # # #
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Also sets D0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               formpl, SPOmp
                                                                                                                                                                  MOVE.L
MOVE.L
LEA
ADD.L
JSR
                                                                                                                                          SYNOPSIS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             None
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEE ALSO
                                                                                                                                                                                                                                               FUNCTION
                                                                                                                                                                                                                                                                                                             INPUTS
                                                                                                                                                                                                                                                                                                                                                                                        RESULT
                                                                           BUCS
                                                                                                                                                                                                                                                                                                                 - A-2 -
```

```
mathffp.library/LVOSPDiv
                                                                                                                                                                                                                                                                                                       Accepts two floating point numbers and returns the arithmetic division of said numbers
                                                                           _LVOSPDiv - divide two floating point numbers
                                                                                                                                                                                                                                                                                                                                                                                                         (arg 1)
(arg 2)
                                                                                                                                                                                                                                                                                                                                                                                                      D1 - floating point number
D0 - floating point number
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   D0 - floating point number
mathffp.library/LVOSPDiv
                                                                                                                                                   ARC1, D0
ARC2, D1
LVOSPD1v, A0
MathBase, A0
(A0)
```

| | Dec. 4, 09:39, 1985. Assembler: Math. Doc Page 5 | Dec 4 09:39 1985 Assembler.Math.Doc Page 6 |
|------------|--|---|
| | • | |
| | mathffp.library/_LVOSPFix | mathffp.llbrary/_LVOSPFlt mathffp.ll |
| | NAVE | NAVE |
| | LVOSPFix - convert fast floating point number to integer | _LVGSPFlt - convert integer number to fast floating point |
| | SINOPSIS | SYNOPSIS |
| | MOVE.L ARG, DO LEA LWOSPF1x, A0 ADD.L MathBase, A0 JSR (A0) | MCVE.L ARG.D0 LEA _LVOSPF1t,A0 ADD.L _MathBase,A0 JSR (A0) |
| | FUNCTION | FUNCTION |
| | Accepts a floating point number and returns the truncated integer portion of said number | Accepts an integer and returns the converted floating point result of said number |
| | INPUTS | INPUTS |
| _ | D0 - floating point number | D0 - signed integer number |
| A - | RESULT | RESULT |
| 3 - | D0 - signed integer number | D0 - floating point number |
| • | BUCS | BUCS |
| | None | None |
| | SEE ALSO | SEE ALSO |
| | ffixi, SPFix | fflt1, SPFlt |
| | | |
| | | |
| | | |
| | | |
| | | |

mathffp.library/_LVOSPFlt

fneg1, SPNeg MOVE.L P LEA ADD.L JSR SYNOPSIS FUNCTION None SEE ALSO INPUTS RESULT NAME mathffp.library/LVOSPMul Accepts two floating point numbers and returns the arithmetic multiplication of said numbers _LVOSPMul - multiply two floating point numbers Dec 4 09:39 1985 Assembler.Math.Doc Page 7 D1 - floating point number (arg 1) D0 - floating point number (arg 2) D0 - floating point number mathffp.library/_LVOSPMul ARG1, DO ARG2, D1 LVOSPM11, A0 MathBase, A0 (A0) fmull, SPMul MOVE.L. MOVE.L. LEA ADD.L. JSR SYNOPSIS None FUNCTION SEE ALSO INPUTS RESULT BUCS

| Dec 4 09:39 1985 Assembler.Math.Doc Page 9 | Dec 4 09:39 1985 Assembler.Math. |
|---|---|
| mathftp.llbrary/_LWGPSub | mathffp.llbrary/_LWOSPIst |
| NAME | NAME |
| _LVOSPSub - subtract two floating point numbers SYNORSIS | |
| HOVE: L ARG1, DO | SYNOPSIS |
| | 1.7 |
| FUNCTION | STINCTION (AU) |
| Accepts two floating point numbers and returns the arithmetic subtraction of said numbers | Accepts a floating point number |
| INPUTS | codes set to indicate the resu the value of zero (0.0) |
| D1 - floating point number (arg 1) D0 - floating point number (arg 2) | INPUTS |
| RESULT | DI - Iloacing point number |
| D0 - floating point number | KESULI Condition ander set to reflect |
| BUCS | Collection on the second internal |
| None | EQ - argument = 0.0 NE - argument != 0.0 PL - argument >= 0.0 |
| SEE ALSO | - argument < |
| fsub1, SPSub | . Also sets D0 = +1 => arg > 0.0 = -1 => arg < 0.0 = 0 => arg = 0.0 |
| | BUCS |
| | None |
| | SEE ALSO |
| | ftsti, SPTst |
| | |
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| | |
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```
mathifp.library/LVGGTat mathifp.library/LVGGTat

WAVE

LVGGTat - compares a fast floating point number against
the value zero (0.0) and sets the appropriate
condition codes

STANCRIS

WOYE.L ABC.DI
LLA LVGGTAS.AA
ADD. Lathbase.AA
ADD. Lathbase.
```

```
IEEEDPAbs
                                                                                                                                    SYNOPSIS
                                                                                                                                                                                                             FUNCTION
                                                                                                                                                                                                                                                                                                                                                                                                None
                                                                                                                                                                                                                                                                                                                                                                                                                        SEE ALSO
                                                                                                                                                                                                                                                                                                                      RESULT
                                                                                                                                                                                                                                                                        INPUTS
                                                                          NAME
                                                mathffp.llbrary/LVSPPAdd
                                                                                                                                                                                                                                                Accepts two floating point numbers and returns the arithmetic sum of said numbers
                                                                                              _LVOSPAdd - add two floating point numbers
Dec 4 09:39 1985 Assembler.Math.Doc Page 11
                                                                                                                                                                                                                                                                                                            (arg 1)
(arg 2)
                                                                                                                                                                                                                                                                                                          D1 - floating point number
D0 - floating point number
                                                                                                                                                                                                                                                                                                                                                                     D0 - floating point number
                                                mathffp.library/_LVSPPAdd
                                                                                                                                             ARG1, DO
ARG2, D1
LVOSPAdd, A0
MathBase, A0
                                                                                                                                                                                                 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      faddi, SPAdd
                                                                                                                                              MOVE.L
MOVE.L
LEA
ADD.L
JSR
                                                                                                                      SYNOPSIS
                                                                                                                                                                                                                     FUNCTION
                                                                                                                                                                                                                                                                                                                                                                                                                       None
                                                                                                                                                                                                                                                                                                                                                                                                                                            SEE ALSO
                                                                                                                                                                                                                                                                                 INPUTS
                                                                                                                                                                                                                                                                                                                                           RESULT
                                                                        KARE
                                                                                                                                                                                                                                                                                                                                                                                              BUCS
```

LVOIEEEDFCmp - compares two IEEE D.P. floating point numbers and returns a relative value indicator Accepts two IEEE double precision floating point numbers and returns the CCR and the integer functional result as an indicator of the result of said comparison. Condition codes set to reflect the following branches: DO/D1 - IEEE double precision floating point number D2/D3 - IEEE double precision floating point number Dec 4 09:39 1985 Assembler.Math.Doc Page 14 MOVE. L. MathleeeDoubBasBase, A6 MOVEM. L. ARCI, D0/D1 MOVEM. L. ARC2, D2/D3 JSR L.VOIEEEDPCmp (A6) (D0 = -1) (D0 = -1) (D0 = -1) mathiesedoubbas.library/_LVOIEEEDPOmp LT - ARC1 < ARC2 GT - ARC1 > ARC2 ELSE - ARC1 = ARC2 IEEEDPOmp SYNOPSIS FUNCTION None SEE ALSO INPUTS RESULT NAME BUCS _LWOIEEEDPAdd - add two IEEE double precision floating point numbers Accepts two IEEE D.P. floating point numbers and returns the arithmetic sum of said numbers. DO/D1 - IEEE double precision floating point number D2/D3 - IEEE double precision floating point number DO/D1 - IEEE double precision floating point number Dec 4 09:39 1985 Assembler.Math.Doc Page 13 MOVE.L. JAITHIGGGDOUDBASBASO,A6 MOVEM.L. ARCI,D0/D1 MOVEM.L. ARC2,D2/D3 JSR. _LVOIEEEDPAdd (A6) mathiesedoubbas.library/LVOIEEEDPAdd **IEEEDPAdd** None SYNOPSIS **FUNCTION** SEE ALSO - A-7 -INPUTS BUCS

Dec 4 09:39 1985 Assembler.Math.Doc Page 16 D0 - signed integer number IEEEDPF1t SYNOPSIS FUNCTION None SEE ALSO RESULT INPUTS NAME BUCS _LWOIEEEDPDiv - divide two IEEE double precision floating point numbers Accepts two IEEE double precision floating point numbers and returns the arithmetic division of said numbers. DO/D1 - IEEE double precision floating point number D2/D3 - IEEE double precision floating point number D0/D1 - IEEE double precision floating point number Dec 4 09:39 1985 Assembler.Math.Doc Page 15 MOVE.L. MathleeeDoubBasBase, A6 MOVEN.L. ARCI, D0/D1 MOVEN.L. ARC2, D2/D3 JSR _LVOIEEEDPAdd (A6) mathiesedoubbas.library/_LWOIEEEDPDiv IEEEDPD1v SYNOPSIS FUNCTION None SEE ALSO INPUTS RESULT MAR **B** S3

_LVOIEEEDPFit - convert integer number to IEEE D.P. floating point Accepts an integer and returns the converted IEEE double precision floating point result of said number. D0/D1 - IEEE double precision floating point number MOVE.L MathleeeDoubBasBase,A6 MOVE.L ARG,D0 JSR LVOIEEEDFIL(A6) mathieeedoubbas.library/LWOIEEEDPFlt

IEEEDPNeg SYNOPSIS FUNCTION None SEE ALSO INPUTS RESULT NAME BUCS _LVOIEEEEEPRul - multiply two IEEE double precision floating point numbers Accepts two IEEE D.P. floating point numbers and returns the arithmetic multiplication of said numbers. D0/D1 - IEEE double precision floating point number D2/D3 - IEEE double precision floating point number D0/D1 - IEEE double precision floating point number Dec 4 09:39 1985 Assembler.Math.Doc Page 17 NOVE.L. MathleesDoubBasBase, A6
NOVEN.L. ARCI, D0/D1
NOVEN.L. ARC2, D2/D3
JSR __LVOIEEEDPAdd (A6) mathiesedoubbas.library/_LVOIEEEDPMul I EEEDPMul None SYNOPSIS FUNCTION SEE ALSO RESULT INPUTS BUCS - A-9 -

Dec 4 09:39 1985 Assembler.Math.Doc Page 18
mathleeadoubbas.library/_LVOIEEEDPHeg

NAME
_LVOIEEEDPNeg - negate the supplied IEEE double precision
floating point number
SYNOCPSIS

WOVEN.L _MathleeaDoubBasBase.A6
WOVEN.L _MathleeaDoubBasBase.A6
WOVEN.L _MACLDO/DI
JSR _LVOIEEEDPNeg(A6)
FUNCTION
Accepts an IEEE D.P. floating point number and returns the value of said number after having been subtracted from 0.0
INPUTS

DO/DI - IEEE double precision floating point number
RESULT

DO/DI - IEEE double precision floating point number
BUCS

None
SEE ALSO
IEEEDPNeg

NOTE: Using number directly within parenthesis to generate in-line code is much more efficient. Accepts an IEEE double precision floating point number and returns the CCR and the integer functional result as an indicator of the result of comparison against the value 0.0. - compares an IEEE D.P. floating point number against the value 0.0 and returns a relative value indicator Condition codes set to reflect the following branches: D0/D1 - IEEE double precision floating point number Dec 4 09:39 1985 Assembler.Math.Doc Page 20 MOVE.L _MathleeeDoubBasBase,A6 MOVEM.L ARC,D0/D1 JSR _LVOIEEEDPTst(A6) mathiesedoubbas.library/_LVOIEEEDPTst (D0 = -1) (D0 = +1) (D0 = 0) CT - ARG < 0.0 CT - ARG > 0.0 ELSE - ARG = 0.0 LVOIEEEDPTst IEEEDPTst SYNOPSIS FUNCTION None SEE ALSO INPUTS RESULT NAME BUCS _LVOIEEEDPSub - subtract two IEEE double precision floating point numbers Accepts two IEEE D.P. floating point numbers and returns the arithmetic subtraction of said numbers. D0/D1 - IEEE double precision floating point number D2/D3 - IEEE double precision floating point number D0/D1 - IEEE double precision floating point number Dec 4 09:39 1985 Assembler.Math.Doc Page 19 MOVE. L. MathleeeDoubBasBase, A6 MOVEM. L. ARCI, Do/D1 MOVEM. L. ARC2, D2/D3 JSR _LVOIEEEDPAdd (A6) mathiesedoubbas.library/_LVOIEEEDPSub IEEEDPSub SYNOPSIS None FUNCTION SEE ALSO INPUTS RESULT 800 800

| Dec 4 09:39 1985 Assembler.Math.Doc Page 21 | Dec 4 09:39 1985 Assembler Math. Doc Page 22 | |
|--|--|-----------|
| mathtrans.llbrary/_LWCSPAcos | mathtrans.library/_LVOSPAsin | LVOSPAsin |
| NAVE | NAME | |
| _LVOSPAcos - obtain the arccosine of the floating point number | _LVOSPAsin - obtain the arcsine of the floating point number | |
| SINOPSIS | SYNOPSIS | |
| MOVE. L ARC, D0 LEALVOSPAcos, A0 ADD. LMathTransBase, A0 JSR (A0) | MOVE.L ARG.D0 LEA LWOSPAsin,A0 ADD.L MathfransBase,A0 JSR (A0) | |
| FUNCTION | FUNCTION | |
| Accepts a floating point number representing the cosine of an angle and returns the value of said angle in radians | Accepts a floating point number representing the sine of an angle and returns the value of said angle in radians | |
| INPUTS | INPUTS | |
| D0 - floating point number | DO - floating point number | |
| RESULT | RESULT | |
| DO - floating point number | D0 - floating point number | |
| BUCS | BUCS | |
| None | None | |
| SEE ALSO | SEE ALSO | |
| SPAcos | SPAsin | |
| | | |
| | | |

| | Dec 4 09:39 1985 Assembler.Math.Doc Page 24 |
|------------------------------|---|
| mathtrans.library/_LVOSPAtan | mathtrans.llbrary/_LVOSPCos |
| | NAME |
| ating point number | _LWOSPCos - obtain the cosine of the floating point number |
| | SYNOPSIS |
| | MOVE.L ARC, D0 LEA LVGSPCos, A0 ADD.L MathTransBase, A0 JSR (A0) |
| | FUNCTION |
| the tangent e in | Accepts a floating point number representing an angle in radians and returns the cosine of said angle |
| | INPUTS |
| | D0 - floating point number |
| | RESULT |
| | D0 - floating point number |
| | BUCS |
| | None |
| | SEE ALSO |
| | SPCos |
| | |
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_LWGSPAtan - obtain the arctangent of the floating point number

MOVE.L ARC, DO LEA LIVOSPAtan, A0 ADD.L MathTransBase, A0 JSR (A0)

FUNCTION

SYNOPSIS

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mathtrans.library/_LVOSPAtan

NAME

| NAME JAGGFCosh JAGGF | | Dec 4 09:39 1985 Assembler.Math.Doc Page 25 | Dec 4 09:39 1985 Assembler.Matl |
|--|-------------|--|--|
| NAME JACGPCoat - obtain the hyporbolic costine of the floating point number SYNCPSIS HOWE I. ARC DO LEAR TANNESSES. AO JUST JACGPCoath AO JUST JACGPC a floating point number representing an angle in radiens and returns the hyperbolic costne of said angle JECT JACGPC a floating point number JECT JACGPC AC JUST JACGPC AC | | | mathtrans 11brary/IMSPFm |
| SYMORECAST - Obtain the hyperbolic cosine of the floating point number SYMORE IS NOTE IN THE COSINE OF THE COSINE | | | NAME |
| STIME PROCESSIS HOVE: L. ABG, DO LEA. L. JAKENTON ADD. JUNESCOCIA, AO STAN (AO) FUNCTION Accopts a floating point number representing an angle in radians and returns the hyperbolic cosine of said angle DO - floating point number RESULT None SEE ALSO SPCOSA | | LVOSPCosh - | |
| MOVE L ARG DO LEA LUXGECOCH, A0 ADD. L JACKHTATERSSS.A0 JSR (A0) FUNCTION Accepts a floating point number representing an angle in radians and returns the hyperbolic cosine of said angle INPUTS DO - floating point number BUCS None SEE ALSO SPCoch | | SYNOPSIS | SYNOPSIS |
| PUNCTION Accepts a floating point number representing an angle in radians and returns the hyperbolic cosine of said angle 1NPUTS D0 - floating point number BESULT D0 - floating point number BESULT None SEE ALSO SPCoch | | | |
| Accepts a floating point number representing an angle in radians and returns the hyperbolic cosine of said angle INEUTS DO - floating point number RESULT DO - floating point number BUCS None SEE ALSO SPCosh | | FUNCTION | FUNCTION |
| INPUTS D0 - floating point number RESULT D0 - floating point number BUCS None SEE ALSO SPCosh | | Accepts a floating point number representing an angle in radians and returns the hyperbolic cosine of said angle | Accepts a floating point numbing power |
| RESULT DO - floating point number BUCS None SEE ALSO SPCosh | | INPUTS | INPUTS |
| RESULT RESULT D0 - floating point number D0 - BUCS BUCS BUCS None None SEE ALSO SEE ALSO SPCosh SPEAPO | _ | | D0 - floating point number |
| BUCS None SEE ALSO SPExp SPExp SPExp SPExp | A -: | RESULT | RESULT |
| None SEE ALSO SPCosh | 13 | | |
| AR AREA CONTRACTOR OF THE PROPERTY OF THE PROP | | BUCS | BUCS |
| ## HE ST TO | | None | None |
| | | SEE ALSO | SEE ALSO |
| | | SPCosh | SPExp |
| | | | |
| | | | |

mathtrans.library/_LVOSPExp nent (e**X) of the floating point number mber and returns e raised to the ath.Doc Page 26

| 4 09:39 1985 Assembler.Math.Doc Page 27 | mathtrans.llbrary/_LVOSPfleee | | ONAS | ARC, Do LEA LEA JMOVE LEA JMOTHTransBase, A0 (A0) | FUNCTION | Accepts an IEEE standard format number and returns the same number, only converted into Motorola fast floating point format | INPUTS | D0 - floating point number (IEEE SID format) | RESULT | floating point number (Motorola FFP format) | BUCS | None | SEE ALSO | SPLog | |
|---|-------------------------------|--------------|----------|--|----------|---|--------|--|-----------|---|------|------|----------|---------|--|
| Dec 4 09:39 1985 | mathtrans.library/LWGPF1696 | LVOSPF1eee - | SINCESIS | MOVE.L ARG, DO LEA LVOSER ADO.L JeathTh JSR (A0) | FUNCTION | Accepts an IEEE the same number floating point | INPUTS | | -1 RESULT | 8 | BUCS | None | SEE ALSO | SPF1eee | |

Doc 4 09:39 1965 Assembler.Math.Doc Page 28

mathtrans.library/LWGSFLog

wwg

LWGSLog - obtain the natural logarithm of the floating point number

STMCPSIS

WOYE L ARC, DO

LEA LWGSPCOG, Ab

ADD. L ARC, DO

EWINTION

Accepts a floating point number and returns the natural logarithm (hase e) of said number

NEBUT:

Do - floating point number

RESUT:

Do - floating point number

BUCS

None

SEE ALSO

STFLOG

| | Por 4 09-39 1985 Accompler Math Doc Dags 29 | Dec. 4 09:39 1985 Assembler.Math.Doc Page 30 |
|------------|---|--|
| | | |
| | mathtrans.llbrary/_LVOSPLog10 mathtrans.llbrary/_LVOSPLog10 | mathtrans.library/LVGSPPow mathtrans.l |
| | NAME | NAME |
| | _LVOSPLog10 - obtain the naparian logarithm (base 10) of the floating point au | _LVOSPPow - obtain the exponentiation of two FFP numbers |
| | SYNOPSIS | SYNOPSIS |
| | MCVE.L ARG, D0 LEA LVGSFLog10, A0 ADD.L MathTransBase, A0 JSR (A0) | MOVE L ARG1, D0 MOVE L ARG2, D1 LEA LIVOSPPOM, A0 ADD. JAHTHT-AIRSBASe, A0 LSR (A0) |
| | FUNCTION | |
| | Accepts a floating point number and returns the naparaian logarithm (base 10) of said number | Accepts two (2) floating point numbers and returns the result of ARGI raised to the ARG2 nower |
| | INPUTS | Stilant |
| _ | D0 - floating point number | |
| A - | RESULT | D0 - floating point number (arg 1) |
| 15 | D0 - floating point number | RESULT |
| _ | BUCS | D0 - floating point number |
| | None | BUCS |
| | SEE ALSO | None |
| | SPLog10 | SEE ALSO |
| | | SPPow |
| | | |
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mathtrans.library/LVOSPPow

:

| | Dec 4 09:39 1985 Assembler.Math.Doc Page 32 |
|-----------------------------|---|
| mathtrans.llbrary/_LVOSPSin | mathtrans.library/LVGSPSincos mathtrans.library/LVGSPSincos |
| int number | NAME |
| | SYNOPSIS |
| · | MOVE.L ARC1, D1 MOVE.L ARC2, D0 LEALVOSPS1ncos, A0 ADD.LMathTransBase, A0 JSR (A0) |
| | FUNCTION |
| n angle in | Accepts a floating point number representing an angle in radians and returns both the sine & cosine of said angle |
| | INPUTS |
| | D0 - floating point number D1 - address of cosine result |
| | RESULT |
| | D0 - floating point number (sine) (D1) - floating point number (cosine) |
| • | BUCS |
| | None |
| | SEE ALSO |
| | SPSIncos |
| | |
| | |
| | |
| | |
| | |
| | |

RESULT

D0 - floating point number

INPUTS

D0 - floating point number

SPSin

None SEE ALSO

BUCS

Accepts a floating point number representing an angle in radians and returns the sine of said angle

_LWCSPSin - obtain the sine of the floating point number

SYNOPSIS

MOVE.L. ARC.DO LEA LVOSPSin, AO ADD.L. JMathTransBase, AO JSR (A0)

FUNCTION

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mathtrans.library/_LVOSPSin

NAME

| Dec 4 09:39 1985 Assembler.Math.Doc Page 33 | Dec 4 09:39 1985 Assembler.Math.Doc Page 34 | |
|--|--|-----------|
| mathtrans.library/LWGPSinh | mathtrans.llbrary/LVOSPSort | LVOSPSort |
| | | • |
| INOSPSinh - obtain the hyperbolic sine of the floating point number | sqrt - obtain the square root of the floating point number | |
| SYNOPSIS | SYNOPSIS | |
| MCVE.L ARG, D0 LEA _LVGSPSinh, A0 ADD.L _MathTransBase, A0 JSR (A0) | MOVE.L ARG, D0 LEA LVOSPSqrt, A0 ADD.L JMathTransBase, A0 JSR (A0) | |
| FUNCTION | FUNCTION | |
| Accepts a floating point number representing an angle in radians and returns the hyperbolic sine of said angle | Accepts a floating point number and returns the square root of said number | |
| INPUTS | INPUTS | |
| D0 - floating point number | D0 - floating point number | |
| RESULT | RESULT | |
| D0 - floating point number | DO - floating point number | |
| BUCS | BUCS | |
| None | None | |
| SEE ALSO | SEE ALSO | |
| SPS1nh | SPSqrt | |
| | | |
| | | |
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| Dec 4 09:39 1985 Assembler.Math.Doc Page 35 | | Dec 4 09:39 1985 Assembler.Math.Doc Page 36 | |
|--|-------------|---|------------------------------|
| mathtrans.library/_LVOSPTan mathtrans.library/_LVOSPTan | y/_LVOSPTan | mathtrans.llbrary/_LWOSPTanh | mathtrans.library/_IWOSPTanh |
| NAVE | | | |
| _LVOSPTan - obtain the tangent of the floating point number | | _LVOSPTanh - obtain the hyperbolic tangent of the floating point number | e floating point number |
| SYNOPSIS | | SYNOPSIS | |
| MOVE.L ARG.D0 LEA _LVOSPTan,A0 ADD.L _MathTransBase,A0 JSR (A0) | | MOVE.L ARG, DO LEALWOSPTanh, A0 ADD.LMathIr ansbase, A0 JSR (A0) | |
| FUNCTION | | FUNCTION | |
| Accepts a floating point number representing an angle in radians and returns the tangent of said angle | | Accepts a floating point number representing an angle in radians and returns the hyperbolic tangent of said angle | angle in id angle |
| INPUTS | | INPUTS | |
| D0 - floating point number | | D0 - floating point number | |
| RESULT | | RESULT | |
| D0 - floating point number | | D0 - floating point number | |
| BUCS | | BUCS | |
| None | | None | |
| SEE ALSO | | SEE ALSO | |
| SPTan | | SPTanh | |
| | | | |
| | | | |
| | | | |

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mathtrans.library/_LVOSPTiees _LVOSPI1000 - convert an FFP number to IEEE standard format Accepts a Motorola fast floating point number and returns the same number, only converted into IEEE standard format D0 - floating point number (Motorola FFP format) D0 - floating point number (IEEE STD format) Dec 4 09:39 1985 Assembler.Math.Doc Page 37 ARG, Do LVOSPTiese, A0 MathTransBase, A0 (A0) mathtrans.llbrary/_LWGPT1666 MOVE.L. I LEA ADD.L. JSR SPTiese None SYNOPSIS SEE ALSO FUNCTION INPUTS RESULT BUCS - A-19 -

Dec 4 09:24 1985 C.Language.Math.Doc Page 2 fnum2 = abs(fnum1); SPAbs, LVOSPAbs mathffp.llbrary/abs None SEE ALSO FUNCTION C USAGE INPUTS RESULT NAME BCS Dec 4 09:24 1985 C.Language.Math.Doc Page 1 mathlesedoubbas.library/IEEEDPAdd mathlesedoubbas.library/IEEEDPCmp mathlesedoubbas.library/IEEEDPDIv mathlesedoubbas.library/IEEEDPDIv mathlesedoubbas.library/IEEEDPMul mathlesedoubbas.library/IEEEDPPMul mathlesedoubbas.library/IEEEDPPMul mathlesedoubbas.library/IEEEDPSub mathlesedoubbas.library/IEEEDPSub mathlesedoubbas.library/IEEEDPSub leeedoubbas.library/IEEEDPAbs mathtrans.library/SPSincos mathtrans.library/SPSinh mathtrans.library/SPFiees mathtrans.llbrary/SPLog mathtrans.llbrary/SPLog10 mathtrans.library/SPT1eee mathtrans.library/SPAtan mathtrans.library/SPSqrt mathtrans.library/SPTanh mathtrans.library/SPAcos mathtrans.library/SPAsin mathtrans.library/SPCosh mathtrans.library/SPCos mathtrans.library/SPExp mathtrans.llbrary/SPPow mathtrans.llbrary/SPSin mathffp. 11brary/SPAbs mathffp. 11brary/SPAdd mathffp. 11brary/SPOmp mathffp. 11brary/SPDiv mathffp. 11brary/SPDiv mathffp.library/abs mathffp.library/faddl mathffp.library/fcmpl mathffp.library/fdivi mathffp.library/fdivi mathlink_lib.lib/dbf mathlink_lib.lib/fpa mathlink_lib.lib/fpbcd mathffp.library/SPMul mathffp.llbrary/SPTst mathffp.library/ftsti mathffp.llbrary/SPNeg mathffp.llbrary/SPSub mathlink_lib.lib/arnd mathffp.llbrary/fmull mathffp.llbrary/fnegi mathffp.library/fsub mathtrans.library/tan TABLE OF CONTENTS

mathffp.library/abs Accepts a floating point number and returns the absolute value of said number. Note that this function is called by compiler generated code, not by a user generated function call. abs - obtain the absolute value of the fast floating point number fnum2 - floating point absolute value of fnum1 fnum1 - floating point number

| | Doc 4 00:34 1085 C Lancisco Math Doc Dags 4 |
|--|---|
| | * 07:4* 1903 C. naliguaçia riadii. DOC Faga |
| ry/faddi | mathffp.llbrary/fcmpl |
| | NAME |
| | fompi - compares two floating point numbers and sets appropriate condition codes |
| | C USACE |
| | <pre>1f (frum1 <= frum2) {} D1 D0</pre> |
| | FUNCTION |
| | Accepts two floating point numbers and returns the condition codes set to indicate the result of said comparison. Note that this function is called by compiler generated code, not by a user generated function call. |
| | INPUTS |
| | fnum1 - floating point number fnum2 - floating point number |
| | RESULT |
| | Condition codes set to reflect the following branches: |
| | GT - frum2 > frum1 GE - frum2 >= frum1 EQ - frum2 = frum1 NE - frum2 != frum1 LT - frum2 < frum1 LE - frum2 <= frum1 |
| | BUCS |
| ······································ | None |
| | SEE ALSO |
| | SPCrip, _LVOSPCrip |
| | |
| | |
| | |
| | |

| | Dec 4 09:24 1985 C.Language.Math.Doc Page 5 | Dec 4 09:24 1985 C.Language.Mat |
|----|---|--|
| | mathffp.llbrary/fdlv1 | mathffp.llbrary/fflt1 |
| | NACE | NAME |
| | fdivi - divide two floating point numbers | fflt1 - convert integer numbe |
| | C USACE | fflt1 - convert integer number to |
| | frum3 = frum1 / frum2; D1 D0 | C USAGE From = (FTOAT) trum. |
| | NOLLOWING | DO DO |
| | Accepts two floating point numbers and returns the arithmetic division of said numbers. Note that this function is called by compiler generated code, not by a user | FUNCTION Accepts an integer and return floating point result of said |
| | generated function call. | is called by compiler generate generated function call. |
| | | INPUTS |
| | fnuml - floating point number fnum2 - floating point number | inum - signed integer number |
| 22 | RESULT | RESULT |
| | fnum3 - floating point number | fnum - floating point number |
| | BUCS | BUCS |
| | None | None |
| | SEE ALSO | SEE ALSO |
| | SPDiv, LVOSPDiv | SPF1t, _LWOSPF1t |
| | | |
| | | |
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Dec 4 09:24 1985 C.Language.Math.Doc Page 8 mathffp.llbrary/fnegl SPNeg, _LVOSPNeg -fnum1; D0 frum2 = None FUNCTION SEE ALSO C USAGE INPUTS RESULT NAME BUCS mathffp.llbrary/fmuli Accepts two floating point numbers and returns the arithmetic multiplication of said numbers. Note that this function is called by compiler generated code, not by a user generated function call. fmuli - multiply two floating point numbers Dec 4 09:24 1985 C.Language.Math.Doc Page 7 frum1 - floating point number frum2 - floating point number fnum3 - floating point number frum3 = frum1 * frum2; D1 D0 mathffp.llbrary/fmuli SPMul, LVOSPMul None FUNCTION SEE ALSO C USACE INPUTS RESULT S SE BUCS

mathffp.llbrary/fnegi Accepts a floating point number and returns the value of said number after having been subtracted from 0.0 Note that this function is called by compiler; generated code, not by a user generated function call. fnegi - negate the supplied floating point number fnum2 - floating point negation of fnum1 fnuml - floating point number

| Dec 4 09:24 1985 C.Language.Math.Doc Page 9 | Dec 4 09:24 1985 C.Language.Math.Doc Page 10 |
|---|---|
| mathffp.llbrary/fsubl | mathifp.library/ftsti |
| NAME | NAME |
| fsub1 - subtract two floating point numbers C USAGE | first! - compares a fast floating point number against the value zero (0.0) and sets the appropriate condition codes |
| frum3 = frum1 - frum2; D1 D0 | C USACE |
| | 1f (frum) {} D1 |
| Accepts two floating point numbers and returns the arithmetic subtraction of said numbers. Note that this function is called by compiler generated code, not by a user generated function call. | FUNCTION Accepts a floating point number and returns the condition codes set to indicate the result of a comparison against the value of zero (0.0). Note that this function is called by compiler generated code, not by a user |
| frum1 - floating point number frum2 - floating point number | generated function call. INPUTS |
| RESULT | fnum - floating point number |
| fnum3 - floating point number | RESULT |
| BUCS | Condition codes set to reflect the following branches: |
| None | EQ - frum = 0.0 |
| SEE ALSO | . !! ~ |
| SPSub, LVOSPSub | |
| | None |
| | SEE ALSO |
| | SPIst, LVOSPIst |
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mathffp.library/ftst1

Dec 4 19:24 1985 C.Language.Math.Doc Page 12
mathffp.library/SPAdd

NAVE

SPAdd - add two floating point numbers
C USACE
frum3 = SPADD(frum1, frum2);
EUNCTION
Accepts two floating point number and returns the arithmetic
sum of said numbers.

INPUTS
frum1 - floating point number
frum3 - floating point number

RESULT
frum3 - floating point number

SEE ALSO
__LVOSFAdd, faddi

mathffp.llbrary/SPDiv Accepts two floating point numbers and returns the arithmetic division of said numbers. Dec 4 09:24 1985 C.Language.Math.Doc Page 14 SPDiv - divide two floating point numbers fnum1 - floating point number
fnum2 - floating point number fnum3 = SPDiv(fnum1, fnum2); D1 D0 fnum3 - floating point number mathffp.library/SPDiv LVOSPDIV, fdivi None FUNCTION SEE ALSO C USAGE INPUTS RESULT BESS mathffp. 11brary/SPOmp Accepts two floating point numbers and returns the condition codes set to indicate the result of said comparison. Additionally, the integer functional result is returned to indicate the result Condition codes set to reflect the following branches: - compares two floating point numbers and sets appropriate condition codes Dec 4 09:24 1985 C.Language.Math.Doc Page 13 fnuml - floating point number
fnum2 - floating point number Integer functional result as: GT - frum2 > frum1 GZ - frum2 >= frum1 EQ - frum2 = frum1 NE - frum2 |= frum1 LT - frum2 < frum1 LR - frum2 <= frum1 +1 => frum1 > frum2 -1 => frum1 < frum2 0 => frum1 = frum2 of said comparison.

RESULT

INPUTS

LVOSPOmp, fompt

None SEE ALSO

BUCS

mathffp.llbrary/SPOmp

NATION

C USACE

FUNCTION

| 101 | |
|-----------------------|---|
| | Dec 4 09:24 1985 C.Language.Math.Doc Page 16 |
| mathffp.llbrary/SPFlt | mathffp.llbrary/SPMul |
| | NAME |
| | SPMul - multiply two floating point numbers |
| | C USACE |
| | frum3 = SPMu1 (frum1, frum2); D1 D0 |
| | FUNCTION |
| | Accepts two floating point numbers and returns the arithmetic multiplication of said numbers. |
| | INPUTS |
| | fnum1 - floating point number fnum2 - floating point number |
| | RESULT |
| | fnum3 - floating point number |
| | BUCS |
| | None |
| | SEE ALSO |
| | _LVOSPMu1, fmu11 |
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SPFlt - convert integer number to fast floating point

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mathffp.llbrary/SPFlt

NAME

Accepts an integer and returns the converted floating point result of said number.

INPUTS

frum = SPFlt(inum); D0

C USACE

FUNCTION

| | Dec 4 09:24 1985 C.Language.Math.Doc Page 18 |
|----------|--|
| D | mathffp.llbrary/SPSub |
| | NAME |
| | SPSub - subtract two floating point numbers |
| | C USACE |
| | fnum3 = SPSub(fnum1, fnum2); D1 D0 |
| | FUNCTION |
| | Accepts two floating point numbers and returns the arithmetic subtraction of said numbers. |
| | . SINDNI |
| | fnum1 - floating point number fnum2 - floating point number |
| | RESULT |
| | fnum3 - floating point number |
| | BUCS |
| | None |
| | SEE ALSO |
| | _LWOSPSub, fsub1 |
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| Dec 4 09:24 1985 | C.Language.Math.Doc Page 17 |
|--------------------------------|--|
| mathffp.library/SPNog | Neg mathftp.llbrary/SPNeg |
| NAG | |
| SPNeg - negate | SPNeg - negate the supplied floating point number |
| C USACE | |
| frum2 = SPNeg(frum1); D0 | fruml); D0 |
| FUNCTION | |
| Accepts a float of said number | Accepts a floating point number and returns the value of said number after having been subtracted from 0.0 |
| INPUTS | |
| frum1 - floating point number | ng point number |
| RESULT | |
| fnum2 - floatin | floating point negation of fnumi |
| BUCS | |
| None | |
| SEE ALSO | |
| _LVOSPNeg, fnegi | |
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Dec 4 09:24 1985 C.Language.Math.Doc Page 20 mathiesedoubbas.library/IEEEDPAbs fnum1 = IEEEDPAbs (fnum2));
D0/D1
D0/D1 LVOIEEEDPAbs IEEEDPAbs None SEE ALSO FUNCTION C USAGE RESULT INPUTS RAFE 80 83 mathffp.library/SPTst Accepts a floating point number and returns the condition codes set to indicate the result of a comparison against the value of zero (0.0). Additionally, the integer functional compares a fast floating point number against the value zero (0.0) and sets the appropriate condition codes Condition codes set to reflect the following branches: Dec 4 09:24 1985 C.Language.Math.Doc Page 19 Integer functional result as: fnum - floating point number if (!(SPTst(fnum))) {...} EQ - frum = 0.0 NE - frum != 0.0 PL - frum >= 0.0 MI - frum < 0.0 +1 => fnum > 0.0 -1 => fnum < 0.0 0 => fnum = 0.0 result is returned. mathffp.library/SPTst LWOSPIst, ftst1 SP1st FUNCTION C USACE None SEE ALSO INPUTS RESULT BUGS A-30

mathieeedoubbas.library/IEEEDPAbs - obtain the absolute value of the IEEE double Accepts an IEEE D.P. floating point number and returns the absolute value of said number. frum2 - IEEE double precision floating point number fnum1 - IEEE double precision floating point number precision floating point number

| | Dec 4 09:24 1985 C.Language.Math.Doc Page 21 | Dec 4 09:24 1985 C.Language.Math.Doc Pac |
|-----|--|--|
| | mathiesedoubbas.library/IEEEDPAdd mathiesedoubbas.library/IEEEDPAdd | mathlesedoubbas.library/IEEEDFCnp |
| | NAG. | NAME |
| | IEEEDPAdd - add two IEEE double precision floating point numbers | IEEEDPCup - compares two IEEE D.P. flo |
| | C USACE | SUPERIOR OF STREET |
| | frum1 = IEEEDPAdd (frum2, frum3); $D0/D1$ $D0/D1$ $D0/D3$. | 1f (IEEEDPOmp (frum1, frum2)) {} |
| | FUNCTION | FINALTICAL |
| | Accepts two IEEE D.P. floating point numbers and returns the arithmetic sum of said numbers. | Accepts two IEEE double precision floa and returns the COR and the integer fu |
| | INPUTS | as an indicator of the result of said |
| | frum2 - IEEE double precision floating point number frum3 - IEEE double precision floating point number | INPUTS |
| - A | RESU | fnuml - IEEE double precision floating fnum2 - IEEE double precision floating |
| -31 | frum1 - IEEE double precision floating point number | RESULT |
| | BUCS | Condition codes set to reflect the fol |
| | None | LT - frum1 < frum2 (Functions |
| | SEE ALSO | SE - frum1 = frum2 |
| | LVOIEEEDPAdd | BUCS |
| | | None |
| | | SEE ALSO |
| | | LVOIEEEDPOmp |
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mathieeedoubbas.library/IEEEDPCmp
                                                                                                                                                                                                                                                         floating point numbers
functional result
id comparison.
                                                                                                                loating point numbers
alue indicator
                                                                                                                                                                                                                                                                                                                                                                                                                     ollowing branches:
                                                                                                                                                                                                                                                                                                                                                                                                                                              nnal Result = -1)
nnal Result = +1)
nnal Result = 0)
                                                                                                                                                                                                                                                                                                                                                ng point number
ng point number
Page 22
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mathiesedoubbas.library/IEEEDPFlt IEEEDPFit - convert integer number to IEEE D.P. floating point Accepts an integer and returns the converted IEEE double precision floating point result of said number. frum - IEEE double precision floating point number Dec 4 09:24 1985 C.Language.Math.Doc Page 24 mathieeedoubbas.library/IEEEDPFlt inum - signed integer number fnum = IEEEDPF1t(inum); D0/D1 D0 LVOIEEEDPF1t FUNCTION None SEE ALSO C USACE RESULT NAME mathieeedoubbas.library/IEEEDPDiv IEEEDPDiv - divide two IEEE double precision floating point numbers Accepts two IEEE double precision floating point numbers and returns the arithmetic division of said numbers. fnum2 - IEEE double precision floating point number fnum3 - IEEE double precision floating point number frum1 - IEEE double precision floating point number Dec 4 09:24 1985 C.Language.Math.Doc Page 23 frum1 = IEEEDPMul (frum2, frum3); D0/D1 D2/D3mathiesedoubbas.library/IEEEDPDiv LVOIEEEDPD1v

None SEE ALSO

BUCS

- A-32

FUNCTION

INPUTS

C USAGE

SEE.

| NAME IEEEDPNeg - negate the supplied IEEE double precision floating point number C USACE frum1 = IEEEDPNeg(frum2); D0/D1 |
|--|
| DPNeg - 1 = IEEE |
| 1 = IEEE |
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| |
| FUNCTION |
| Accepts an IEEE D.P. floating point number and returns the value of said number after having been subtracted from 0.0 |
| INPUTS |
| fnum2 - IEEE double precision floating point number |
| RESULT |
| fnum1 - IEEE double precision floating point number |
| BUCS |
| None |
| SEE ALSO |
| LVOIEEEDPNeg |
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| Dec 4 09:24 1985 C.Language.Math.Doc Page 27 | Dec 4 09:24 1985 C.Language.Math.Doc Page 28 |
|--|--|
| mathlesedoubbas.library/IEEEDPSub mathlesedoubbas.library/IEEEDPSub | mathiesedoubbas.library/IEEEDPTst mathiesedoubbas.library/IEEEDPTst |
| NAME | NAVE |
| IEEEDPSub - subtract two IEEE double precision floating point numbers | IEEEDPTst - compares an IEEE D.P. floating point number against the value 0.0 and returns a relative value indicator |
| C USACE | TOWARD CO. |
| frum1 = IEEEDPSub (frum2, frum3); D0/D1 D0/D1 D2/D3 | If (IEEEDPTst (frum)) {} |
| FUNCTION | DO/DI |
| Accepts two IEEE D.P. floating point numbers and returns the arithmetic subtraction of said numbers. | Accepts an IEEE double precision floating point number |
| INPUTS | and returns the CLR and the integer functional result as an indicator of the result of comparison against the value 0.0. |
| frum2 - IEEE double precision floating point number frum3 - IEEE double precision floating point number | NOTE: Using number directly within parenthesis to generate in-line code is much more efficient. |
| RESULT | INPUTS |
| frum1 - IEEE double precision floating point number | fnum - IEEE double precision floating point number |
| BUCS | RESULT |
| None | Condition codes set to reflect the following branches: |
| SEE ALSO | LT - frum < 0.0 (Functional Result = -1) GT - frum > 0.0 (Functional Result = +1) |
| | - INUM - 0.0 (FUNCTIONAL MESULE - |
| | None |
| | SEE ALSO |
| | LVOIEEEDPTst |
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C. Language. Math. Doc Page 30 frum = dbf(exp, mant); exp bit 16 exp bits 15-0 mathlink_lib.lib/dbf 4 09:24 1985 mant None FUNCTION SEE ALSO ₹ C USACE INPUTS RESULT **D** NAME BUCS mathlink_11b.11b/arnd place - integer value representing number of decimal places to round to exp - integer value representing exponent value of the ASCII string 6string[0] - address where rounded ASCII string is to be placed Accepts an ASCII string representing an FFP floating point number, the binary representation of the exponent of said floating point number and the number of places to round to. A rounding process is initiated, either to the left or right of the decimal place and the result placed back at the arnd - ASCII round of the provided floating point string Dec 4 09:24 1985 C.Language.Math.Doc Page 29 input address defined by &string[0]. 6string[0] - rounded ASCII string arnd(place, exp, &string[0]); mathlink_lib.lib/arnd FUNCTION None SEE ALSO Š C USACE INPUTS RESULT NAME BUCS

mathlink_lib.lib/dbf Accepts a dual-binary format (described below) floating point number and converts it to an FFP format floating point number. The dual-binary format is defined as: = sign (0=>positive, 1=>negative)
= binary integer representing the base
ten (10) exponent exp - binary integer representing sign and exponent mant - binary integer representing the mantissa dbf - convert FFP dual-binary number to FFP format frum - converted FFP floating point format number = binary integer mantissa

4 09:24 1985 C.Language.Math.Doc Page 32 &string[0] - converted BCD data fpbcd(fnum, &string[0]); mathlink_lib.lib/fpbcd MMM SESB Where: FUNCTION None SEE ALSO C USACE Š INPUTS RESULT KAR 2 BUGS mathlink_lib.lib/fpa fpa - convert fast floating point variable into ASCII string equivalent fnum - floating point number
6string[0] - address for output of converted ASCII character string Accepts an FFP floating point number and the address of the ASCII string where it's converted output is to be stored. The number is converted to an ASCII string in C format and stored at the address provided. Additionally, the base ten (10) exponent in binary form is returned as the functional value. 6string[0] - converted ASCII character string
exp - integer exponent value in binary form Dec 4 09:24 1985 C.Language.Math.Doc Page 31 exp = fpa(fnum, &string[0]); mathlink_lib.lib/fpa None SEE ALSO FUNCTION ≶ C USACE INPUTS RESULT 3 **B**CS

mathlink_lib.lib/fpbcd H = Four bytes of BCD, each with two (2) digits of the mantissa (8 digits)
 S = Sign of mantissa (0x00 = positive, 0xFF = negative)
 E = BCD byte for two (2) digit exponent
 S = Sign of exponent (0x00 = positive, 0xFF = negative)
 B = One (1) byte binary two's compliment representation fnum - floating point number
6string[0] - address where converted BCD data is to be placed Accepts a floating point number and the address where the converted BCD data is to be stored. The FFP number is converted and stored at the specified address in an ASCII form in accordance with the following format: fpbcd - convert FFP floating point number to BCD format

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|--|--|
| mathtrans.llbrary/SPAcos | mathtrans.library/SPAsin |
| NAME | NAME |
| SPAcos - obtain the arccosine of the floating point number | SPAsin - obtain the arcsine of the floating point number |
| SINOPSIS | SYNOPSIS |
| frum2 = SPAcos (frum1); D0 | fnum2 = SPAsin(fnum1); DO |
| FUNCTION | FUNCTION |
| Accepts a floating point number representing the cosine of an angle and returns the value of said angle in radiens | Accepts a floating point number representing the sine of an angle and returns the value of said angle in radians |
| INPUTS | INPUTS |
| frum1 - floating point number | fnuml - floating point number |
| RESULT | RESULT |
| fnum2 - floating point number | fnum2 - floating point number |
| BUCS | BUCS |
| None | None |
| SEE ALSO | SEE ALSO |
| LWOSPAcos | LVOSPAsin |
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mathtrans.llbrary/SPAsin

| Page 35 Dec 4 09:24 1985 C.Lenguage.Math.Doc Page 36 | mathtrans.llbrary/SPAtan mathtrans.llbrary/SPCos | NAME | the floating point number SPCos - obtain the cosine of the floating point number | SINGESIS | fnum2 = SPCos (fnum1); D0 | NOLICANIA | presenting the tangent Accepts a floating point number representing an angle in radians and returns the cosine of said angle | INPUTS | fnum1 - floating point number | RESULT | fnum2 - floating point number | BUCS | None | SEE ALSO | LWGRCos | | | |
|--|--|------|--|----------|--------------------------------------|-----------|--|--------|-------------------------------|--------|-------------------------------|------|------|----------|---------|-----------|--|--|
| Dec 4 09:24 1985 C.Language.Math.Doc Page 35 | mathtrans.library/SPAtan | NAME | SPAtan - obtain the arctangent of the floating point number | SYNOPSIS | <pre>fnum2 = SPAten(fnum1); D0</pre> | FUNCTION | Accepts a floating point number representing the tangent of an angle and returns the value of said angle in radians | INPUTS | fruml - floating point number | RESULT | fnum2 - floating point number | | None | | EE ALSO | LVOSPAtan | | |

| Dec 4 09:24 1985 C.Language.Math.Doc Page 37 | Dec 4 09:24 1985 C.Language.Math.Doc Page 38 |
|--|---|
| mathtrans.library/SPCosh mathtrans.library/SPCosh | mathtrans.library/SPExp mathtrans.library/SPExp |
| NAME | NAME |
| SPCosh - obtain the hyperbolic cosine of the floating point number | SPExp - obtain the exponent (e**X) of the floating point number |
| SINCPSIS | SYNOPSIS |
| fnum2 = SPCosh (fnum1); D0 | fnum2 = SPExp (fnum1); D0 |
| FUNCTION | FUNCITION |
| Accepts a floating point number representing an angle in radians and returns the hyperbolic cosine of said angle | Accepts a floating point number and returns e raised to the imput numbers power |
| INPUTS | INPUTS : |
| fnum1 - floating point number | fnum1 - floating point number |
| RESULT | RESULT |
| fnum2 - floating point number | fnum2 - floating point number |
| BUCS | BUCS |
| None | None |
| SEE ALSO | SEE ALSO |
| LVOSPCosh | LVOSPExp |
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|---|---------------------------|---|-------------------------|
| mathtrans.llbrary/SPE1000 | mathtrans.library/SPF1000 | mathtrans.library/SFLog | mathtrans.library/SPLog |
| NAME | | NANCE | |
| SPF1688 - convert an IEEE standard number to FFP format | Cormat | SPLog - obtain the natural logarithm of the floating point number | nt number |
| SYNOPSIS | | SINOPSIS | |
| fnum = SPFicee (lecenum); DO | | frum2 = SPLog(frum1); D0 | |
| FUNCTION | | FUNCTION | |
| Accepts an IEEE standard format number and returns the same number, only converted into Motorola fast floating point format | | Accepts a floating point number and returns the natural logarithm (base e) of said number | |
| INPUTS | | INPUTS | |
| ieserum - floating point number (IEEE SID format) | | Internal - Frogrand Point number | |
| RESULT | | Troops | |
| from - floating point number (Motorola FFP format) | | inum2 - iloating point number | |
| BUCS | | | |
| None | | None | 3 |
| SEE ALSO | | SEE ALSO | |
| LWOSPF1eee | | LVOSPLog | |
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| STROPSIS framal = SPLogio (faumi); FUNCTION Accepts a floating point number and returns the naparian logarithm (base 10) of said number logarithm (base 10) of said number framal - floating point number framal - floating point number RESULT framal - floating point number framal - floating point number SEE ALSO LYGSPLOGIO LYGS | MAME SPOw - obtain the exponentiation of two FFP numbers SYNOPSIS frum3 = SPPow (frum1, frum2); D1 D0 D2 D0 EUNCTION Accepts two (2) floating point numbers and returns the result of frum1 raised to the frum2 power frum1 - floating point number frum2 - floating point number frum3 - floating point number SRSULT frum3 - floating point number SESULT FRESULT FRESULT SESULT FRESULT FRESULT SESULT FRESULT FRE |
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| | Dec 4 09:24 1985 C.Language.Math.Doc Page 44 |
|-------------|---|
| ry/SPS4n | mathtrans.llbrary/SPSincos mathtrans.llbrary/SPSincos |
| | NAME |
| | SPSincos - obtain the sine & cosine of the FFP number |
| | SYNOPSIS |
| | fnum3 = SPSincos(fnum1, &fnum2); D1 D0 |
| | FUNCTION |
| | Accepts a floating point number representing an angle in radians and returns both the sine & cosine of said angle |
| | INPUTS |
| | frum1 - floating point number &fnum2 - address of cosine result |
| | RESULT |
| | <pre>fnum2 - floating point number (cosine) fnum3 - floating point number (sine)</pre> |
| | BUCS |
| | None |
| | SEE ALSO |
| | LVoSPS1ncos |
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|--|--|
| mathtrans.llbrary/SPSinh mathtrans.llbrary/SPSinh | mathtrans.llbrary/SPSgrt mathtrans.li |
| ENAME. | NAME |
| SPSinh - obtain the hyperbolic sine of the floating point number | SPSqrt - obtain the square root of the floating point number |
| SYNOPSIS | SYNOPSIS |
| frum2 = SPSinh(frumi); D0 | froum2 = SPSqrt (from1); D0 |
| FUNCTION | FUNCITON |
| Accepts a floating point number representing an angle in radians and returns the hyperbolic sine of said angle | Accepts a floating point number and returns the square root of said number |
| INPUTS | . STADNI |
| fnum1 - floating point number | fnum1 - floating point number |
| RESULT | RESULT |
| frum2 - floating point number | fnum2 - floating point number |
| BUCS | BUCS |
| None | None |
| SEE ALSO | SEE ALSO |
| LWGSPSInh | _LVOSPSqrt |
| | |
| | |
| | |

mathtrans.library/SPSqrt

| mathtrans.llbrary/SPTanh | |
|---|---|
| trans.library/SPTanh | |
| | mathtrans.library/SPTieee |
| | NAME |
| SPTanh - obtain the hyperbolic tangent of the floating point number | SPT1eee - convert an FFP number |
| SYNOPSIS | SYNOPSIS |
| frum2 = SPTernh (frum1); D0 | ieeenum = SPTieee (fnum); |
| FUNCTION | FUNCTION |
| Accepts a floating point number representing an angle in radians and returns the hyperbolic tangent of said angle | Accepts a Motorola fast floating returns the same number, only or standard format |
| INPUTS | INPUTS |
| fnumi - floating point number | fnum - floating point number (Mk |
| RESULT | RESULT |
| fnum2 - floating point number | 1eeenum - floating point number |
| BUCS | BUCS |
| None | None |
| SEE ALSO | SEE ALSO |
| _LVOSPTanh | LVOSPT1888 |
| | |

Dac 4 09:24 1985 C.Language.Math.Doc Page 48
mathtrans.library/SFTiese

WAME

SFTiese - convert an FEP number to IEEE standard format

SFMCFSIS

Lecenum = SFTiese(frum);
FUNCTION

FOLICYTION

FOLICYTION

FOLICYTION

FOR STANDARY

INPUTS

frum - floating point number (Motorola FEP format)

RESULT

Lecenum - floating point number (Motorola FEP format)

BUSS

None

SEE ALSO

_LNGSFTiese

mathtrans.library/tan Accepts a floating point number representing an angle in radians and returns the tangent of said angle SPTan - obtain the tangent of the floating point number Dec 4 09:24 1985 C.Language.Math.Doc Page 49 fnum1 - floating point number fnum2 - floating point number fnum2 = SPTan(fnum1); D0 mathtrans.llbrary/tan LVOSPTan None SEE ALSO SYNOPSIS FUNCTION RESULT INPUTS BUCS

clist.library/AllocList EXCEPTIONS if clist is negative, no space was available for a new clist. Cet a descriptor that can be used to reference a clist. The clist described is empty. Clists that are no longer in use must be explicitly closed with FreeClist in order to free all their memory: an empty clist still consumes clist pool a longword descriptor for a clist that can be used for clist functions. A clist pool that has already been initialized. NOTES
This function is implicitly performed by BuffoCL. AllocList - allocate and initialize a clist Dec 3 17:04 1985 clist.doc Page 2 cList = AllocList(cLPool) D0 Al clist.library/AllocList INPUTS cLPool -A resources. cList SYNOPSIS FUNCTION RESULTS NAME Dec 3 17:04 1985 clist.doc Page 1 clist.library/GetCLBuf
clist.library/GetCLBuf
clist.library/GetCLGurd
clist.library/GetCLAbrd
clist.library/InttCLPool
clist.library/MarkCList
clist.library/PeekCLMark
clist.library/PutCLBuf
clist.library/PutCLBuf
clist.library/PutCLBuf
clist.library/PutCLBuf
clist.library/SizeCList
clist.library/SizeCList
clist.library/SizeCList
clist.library/WoCetCLGbar
clist.library/WoCetCLGbar
clist.library/UnGetCLGbar
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|--|--|
| Clist. History Proceeds | |
| olist.library/ConcatCList | clist.library/CopyCList |
| NAME ConcatClist - concatinate two character lists | NAME CopyCList - copy a clist to a new clist |
| SYNOPSIS | SISONAS |
| <pre>error = ConcatCList(sourceCList, destCList)</pre> | cList = CopyCList(cList) D0 A0 |
| Exhaust the contents of the sourceClist onto the end of the destClist. The resulting destClist is the concatination of the original destClist and sourceClist; the resulting sourceClist is empty. | FUNCTION Copy a clist non-destructively into a new clist, created by this operation in the same cLPcol. INPUTS |
| INPUTS sourceClist - The clist descriptor used to manage the source character list. destCList - The clist descriptor used to manage the destination character list. | CLIST - CLIST descriptor used to manage the original character list. RESULIS CLIST - a longword descriptor for a clist that can be used for clist functions, and contains the same contents as the original clist. |
| RESULT | EXCEPTIONS |
| <pre>error An error code that, if non-zero, indicates the clist pool associated with the destCList had an out of memory condition during the concatination process.</pre> | if clist is negative, not enough space was available for the new clist. |
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clist.library/CopyCList

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clist.library/FlushCList

NAME FlushCList - clear a character list

clist.library/FlushCList

Synopsis FlushClist (clist) A0

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FUNCTION ensure that the cList is empty.

| Dec 3 17:04 1985 clist.doc Page 8 | clist.library/GetClChar | NAME GetGLChar - get a byte from the beginning of a character list | SYNOPSIS byte = GetCLChar (clist) Do Ao | FUNCTION Get a byte from the beginning of the character list described by the clist. INPUTS CLIST - The clist header used to manage this character list, | RESULTS byte - The byte from the beginning of the character list. If no data is available, the upper three bytes are set (longword is -1). | | | | |
|-----------------------------------|-------------------------|--|--|--|---|---|---|--|--|
| Dec 3 17:04 1985 clist.doc Page 7 | clist.library/CetCLBuf | NAME GetCLBuf - convert a character list to contiguous data | SYNOPSIS Jength = CetCLBuf(cList, buffer, maxLength) D0 A1 A1 D1 | FUNCTION Nove the clist data into the block of memory pointed to by buffer. Exhaust the character list. If a non-destructive peek at the character list is desired, use SubCL. If the clist will no longer be used, remember to FreeClist. INPUTS CList - | The clist descriptor used to manage this character list, as returned by AllocList. buffer - A pointer for the byte data from the character list. maxLength- The maximum size of buffer. | RESULTS length - the number of bytes copied into buffer. This is never greater than maxiength. | EXCEPTIONS If cList was bigger than maxLength, the cList is not empty. | | |

| | Dec 3 17:04 1903 CITSC: GOC Fage 10 |
|--|--|
| clist.library/GetCLMord | clist.llbrary/IncrCLMark |
| NAME GetCLMord - get a word from the beginning of a character list | NAME IncrCLMark - increment a clist |
| SYNOPSIS word = GetCLMord (dList) D0 A0 | SYNOPSIS error = IncrCLMark(cList) D0 A0 |
| FUNCTION Cet a word from the beginning of the character list described by the clist. | FUNCTION Increment a mark for clist open in the clist. |
| INPUTS CList - The clist header used to manage this character list, as returned by AllocClist or StrTcCl. | INPUTS CList - a longword descriptor for clist functions. |
| RESULTS vord - | RESULTS error - |
| The word from the beginning of the character list. If no data is available, the upper two bytes are set (longword is -1). Partial words (1 byte) are not returned. | non-zero if the next of EXCEPTIONS If error is non-zero, the reque beyond the end of the clist, ar |
| | |

| WWE IncrCMark - increment a clist mark to the next position SYNOPSIS error = IncrCMark (clist) by FUNCTION FINCTORM Increment a mark for clist operations to mark the next byte increment a mark for clist operations to mark the next byte increment a mark for clist operations to mark the next byte in the clist. INPUTS a longword descriptor for a clist that can be used for clist functions. RESULTS EXCEPTIONS If error is non-zero if the next offset is not in the clist EXCEPTIONS If error is non-zero, the request asked to move the mark beyond the end of the clist, and the mark is invalid. |
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| Dec 3 17:04 1985 clist.doc Page 12 | <pre>k a position in a clist st(cList, offset)</pre> | FUNCTION Mark the clist for index operations by specifying a byte offset into the clist. Note that only one mark is retained by each clist. If the byte to which the mark refers is subsequently manipulated, the mark will become invalid. INPUTS CLIST - a longword descriptor for a clist that can be used for clist functions. offset - a byte offset into the clist. The first byte in the clist is at offset zero. This value should not be greater than (SizeClist-1). | error - non-zero if the offeet is not in the clist EXCEPTIONS if the offeet is more than the length of the clist, the mark is invalid. |
|---|--|---|--|
| Dec 3 17:04 1985 clist.doc Page 11 clist.library/InitCLPool | tialize a clist pool ol (clPool, size) | memor setti f all that list e poo | If the clist pool provided is so small that not even pool management memory will fit, this is set to non-zero. |

clist.library/MarkCList

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|--|---|
| clist.library/PeekCLMark | clist.library/PutCLBuf |
| NAME PeakCLMark - peak at the byte in the clist at the mark | NAME PutCLBuf - convert contiguous data into a character list |
| SYNCPSIS byte = PeakCIMark(cList) Do A0 | SYNOPSIS error = PutCLBuf(cList, buffer, length) D0 A1 D1 |
| FUNCTION Return the byte value at the mark in the character list associated with the mark. | FUNCTION Append the contents of the data buffer to a character list. The buffer data remains intact. |
| IMPUTS cList - a longword descriptor for a clist that can be used for clist functions. | INPUTS cList - The clist descriptor used to manage this character list, as returned by AllocCList. |
| RESULTS byte - the byte at the mark in the clist. | - |
| | RESULIS error - non-zero indicates the number of bytes not added. |
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| PutCLMord - add a word to the end of a character list SYMCESIS SYMCESIS Buror = PutCLMord (clist, word) Dip AD A | NAME PutCLMo SYNOPSIS | |
|--|-------------------------------|--|
| error = PutCLWord (cList, word) DD | | rd - add a word to the end of a character list |
| Add a word to the end of the character list described by the clist. NEUTS CLIST - The clist header used to manage this character list, as returned by AlloCList or StrToCL. The word to add to the end of the character list in word - The word to add to the end of the character list error - The word indicates the number of bytes not added. Partial words are not added, so error is always zero or two. | þ | PutCLWord (cList, word) A0 D0 |
| d ist . | FUNCTION Add a w cList. | ord to the end of the character list described by the |
| b | List | The clist header used to manage this character list, as returned by AllocClist or StrToCl. |
| þ | | The word to add to the end of the character list |
| | RESULTS error | non-zero indicates the number of bytes not added. Partial words are not added, so error is always zero or two. |
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RESULTS error

non-zero indicates the byte could not be added

clist.library/PutClObar

NAME PutCLChar - add a byte to the end of a character list

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clist.library/PutCLChar

SYNCPSIS error = PutCLChar(cList, byte) D0 A0 D0 FUNCTION
Add a byte to the end of the character list described by the clist.

INPUTS cList -

The clist header used to manage this character list, as returned by AllocCList or StrToCL.

The byte to add to the end of the character list

byte

clist.library/SplitCList

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|--|--|
| | |
| citet.ibrary/SubClist | clist.library/UnGetCLChar |
| NAME SubClist - copy a substring from a clist | NAME UndetCLChar - add a byte to the beginning of a character list |
| SYNOPSIS cList = SubCList(cList, index, length) D0 | SYNOPSIS error = UnCetCLChar(cList, byte) D0 |
| FUNCTION Copy a substring of the clist into a new clist created by this operation. Start at offset index into the character list, and copy for length bytes. The source clist is not altered. | FUNCTION Add a byte to the beginning of the character list described by the clist. INPUTS |
| ist | cList - The clist header used to manage this character list, as returned by AllocCList or StrToCL. byte - The byte to add to the beginning of the character list |
| the substring from. An index of 0 is the first character in the clist. length - The number of bytes to copy. | RESULIS error - non-zero indicates the byte could not be added |
| RESULTS cList - a longword descriptor for a clist that can be used for clist functions. | |
| EXCEPTIONS If cList is negative, not enough space was available for the new clist. | |
| if the substring does not exist for the index and length specified, the resulting clist will be shorter than expected. | |
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| data is available, the upper three bytes are i (longword is -1). | (longword is -1) | data is available, the upper three bytes are (longword is -1). |
| data is available, the upper three bytes are it (longword is -1). | data is available, the upper three bytes are it (longword is -1). | data is available, the upper three bytes are it (longword is -1). |
| The byte from the end of the character list. data is available, the upper three bytes are is (longword is -1). | The byte from the end of the character list. data is available, the upper three bytes are is (longword is -1). | The byte from the end of the character list. data is available, the upper three bytes are is (longword is -1). |
| B DÁG | Dyte The byte from the end of the character list. data is available, the upper three bytes are: (longword is -1). | Dyte The byte from the end of the character list. data is available, the upper three bytes are: (longword is -1). |
| byte — The byte from the end of the character list. data is available, the upper three bytes are i (longword is -1). | byte The byte from the end of the character list. data is available, the upper three bytes are i (longword is -1). | byte The byte from the end of the character list. data is available, the upper three bytes are i (longword is -1) |
| Dyte The byte from the end of the character list. data is available, the upper three bytes are is (longword is -1). | MESULIS The byte from the end of the character list. data is available, the upper three bytes are is (longword is -1). | Dyte The byte from the end of the character list. data is available, the upper three bytes are in (longword is -1). |
| byte The byte from the end of the character list. data is available, the upper three bytes are i (longword is -1). | byte The byte from the end of the character list. data is available, the upper three bytes are i (longword is -1). | byte The byte from the end of the character list. data is available, the upper three bytes are i (longword is -1). |
| byte The byte from the end of the character list. data is available, the upper three bytes are i (longword is -1). | byte The byte from the end of the character list. data is available, the upper three bytes are i (longword is -1). | byte The byte from the end of the character list. data is available, the upper three bytes are i (longword is -1). |
| Pyte | Pyte | Pyte |
| RESULTS byte | RESULTS byte | RESULTS byte |
| Pyte byte | Pyte byte | Pyte byte |
| Pyte | Pyte pyte | Pyte |
| RESULTS byte | RESULTS byte | RESULTS byte |
| The clist header used to manage this character as returned by AllocCList or StrToCL. RESULTS byte The byte from the end of the character list. data is available, the upper three bytes are i (longword is -1). | RESULTS byte | RESULTS byte |
| RESULTS byte | RESULTS byte | RESULTS byte |
| RESULTS byte | RESULTS byte | RESULTS byte |
| List - CList - CList - Dyte | List - Clist - RESULTS byte | List - CList - CList - Dyte |
| INPUTS CList - CList - Byte | INPUTS CList - CList - Byte | INPUTS CList - CList - Byte |
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| IMPUTS cList - RESULTS byte | List - CList - KESULIS byte | IMPUTS CList - CList - CList - CList - |
| INPUTS cList - CLIST - Dyte | IMPUTS cList - cList - pyte | INPUTS cList - CLIST - Dyte |
| INPUTS CLIST - CLIST - Byte | INPUTS CList - CList - Byte | INPUTS CList - CList - Byte |
| CList. INPUTS CLIST. CLIST. Pyte byte | CList. INPUTS CList. RESULTS byte | CList. INPUTS CList. RESULTS byte |
| INPUT | INPUT | INPUT |
| Get a by Clist INPUTS CList Alist Dyte | INPUT | INPUT |
| INPUT | INPUT | INPUT |
| FUNCT I NPUT | FESUL | FUNCT I NPUT |
| I NPUT | FUNCT RESULT | INPUT THESTON |
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| FUNCT I NPUT | INPUT RESUL | INPUT INPUT |
| EUNCI INPUT | EUNCI INPUT RESUL | EUNCI INPUT RESUL |
| Get a byte from the end of the character list described by the clist. INPUTS CLIST. The clist header used to manage this character list, as returned by AllocCList or StrfoCL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | FUNCTION Get a byte from the end of the character list described by the clist. INPUTS GLIST. The clist header used to manage this character list, as returned by AllocClist or StrToCl. RESULTS Pyte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | EUNCTION Get a byte from the end of the character list described by the clist. INPUTS GLIST. The clist header used to manage this character list, as returned by AllocClist or StrToCl. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). |
| Get a byte from the end of the character list described by the clist. INPUTS dist The clist header used to manage this character list, as returned by AllocClist or StrToCl. RESULTS Pyte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | Get a byte from the end of the character list described by the clist. INPUTS CLIST. TREUTS The clist header used to manage this character list, as returned by AllocList or StrToCL. RESULTS Pyte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | Get a byte from the end of the character list described by the clist. INPUTS CLIST TREUTS The clist header used to manage this character list, as returned by AllocClist or StrToCl. RESULTS Pyte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). |
| Cost a byte from the end of the character list described by the chist. INFURS CLIST - The clist header used to manage this character list, as returned by Allocalist or StrToca. RESULIS byte - The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | Get a byte from the end of the character list described by the clist. INFURS CLIST - The clist header used to manage this character list, as returned by AllocClist or StrToCL. RESULTS The byte from the end of the character list. If no data is available, the upper three bytes are set (long-ord is -1). | Get a byte from the end of the character list described by the clist. INFURS CLIST - The clist header used to manage this character list. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). |
| Cet a byte from the end of the character list described by the clist. INPUTS CLIST The clist header used to manage this character list, as returned by AllocCList or StrToCL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | FUNCTION Get a byte from the end of the character list described by the clist. INPUTS GLIST - The clist header used to manage this character list, as returned by Allocalist or Strfoct. RESULIS byte - The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | FUNCTION Get a byte from the end of the character list described by the clist. INPURS GLIST - The clist header used to manage this character list, as returned by AllocdList or StrTocL. RESULIS byte - The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). |
| FUNCTION Get a byte from the end of the character list described by the clist. INPUTS CLIST. The clist header used to manage this character list, as returned by AllocList or StrToCL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | FUNCTION Get a byte from the end of the character list described by the clist. IMPUTS CLIST. The clist header used to manage this character list, as returned by AllocCList or StrToCL. RESULTS Pyte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | FUNCTION Get a byte from the end of the character list described by the clist. INPUTS CLIST. The clist header used to manage this character list, as returned by AllocCList or StrToCL. RESULTS Pyte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). |
| FUNCTION Get a byte from the end of the character list described by the clist. INFURS CLIST. The clist header used to manage this character list, as returned by AllocList or StrToCL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longered is -1). | FUNCTION Get a byte from the end of the character list described by the clist. IMPUTS CLIST. The clist header used to manage this character list, as returned by AllocList or StrTcL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | FUNCTION Get a byte from the end of the character list described by the clist. IMPUTS CLIST. The clist header used to manage this character list, as returned by AllocList or StrToCL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). |
| FUNCTION Get a byte from the end of the character list described by the clist List. The clist header used to manage this character list, as returned by AllocList or StrocL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | FUNCTION Got a byte from the end of the character list described by the clist. INFURS GLIST. The clist header used to manage this character list, as returned by AllocList or StrToCL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | FUNCTION Got a byte from the end of the character list described by the clist. INFURS CLIST. The clist header used to manage this character list, as returned by AllocList or StrTcL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). |
| FUNCTION Get a byte from the end of the character list described by the clist. INEUTS GLIST. The clist header used to manage this character list, as returned by AllocClist or StrToCl. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | FUNCTION Get a byte from the end of the character list described by the clist List. THPUTS CLIST. The clist header used to manage this character list, as returned by AllocClist or StrTcCl. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | FUNCTION Get a byte from the end of the character list described by the clist. INPUTS Glist - The clist header used to manage this character list, as returned by AllocClist or StrfoCL. RESULTS byte - The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). |
| FUNCTION Get a byte from the end of the character list described by the clist. INPUTS GLIST. TREVITS GLIST - The clist header used to manage this character list, as returned by AllocClist or StrToCl. RESULTS Pyte The byte from the end of the character list. If no data is available, the uper three bytes are set (longword is -1). | FUNCTION Get a byte from the end of the character list described by the clist. INPUTS GList. The clist header used to manage this character list, as returned by AlloCList or StrToCL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longeord is -1). | FUNCTION Get a byte from the end of the character list described by the clist. The clist header used to manage this character list, as returned by Allocalist or Strica. RESULTS Dyte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). |
| FUNCTION Gat a byte from the end of the character list described by the clist. INPUTS CLIST. The clist header used to manage this character list, as returned by AllocList or StrToCL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | FUNCTION Get a byte from the end of the character list described by the clist. IMPUTS CLIST. The clist header used to manage this character list, as returned by AllocClist or StrIoCL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | FUNCTION Get a byte from the end of the character list described by the clist. IMPUTS CLIST. The clist header used to manage this character list, as returned by AllocList or Strick. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longeord is -1). |
| FUNCTION Get a byte from the end of the character list described by the clist. INPUTS CLIST. The clist header used to manage this character list, as returned by AllocList or StrToCL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | FUNCTION Get a byte from the end of the character list described by the clist. INPUTS CLIST header used to manage this character list, as returned by AlloCList or StrToCL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | FUNCTION Get a byte from the end of the character list described by the clist. INPUTS CLIST. The clist header used to manage this character list, as returned by AlloCList or StrToCL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). |
| Dyre = Unbutching (chist) EUNCTION Get a byte from the end of the character list described by the chist. INFURS CLIST. The clist header used to manage this character list, as returned by Allocilist or Strici. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | Dyte = UnbutCLArr (clist) Dyte = UnbutCLArr (clist) Dyte = UnbutCLArr Cet a byte from the end of the character list described by the clist. INPUTS | Dyte = Unbutcher (clist) Dyte = Unbutcher (clist) Cet a byte from the end of the character list described by the clist. INPUTS Clist - The clist header used to manage this character list, as returned by AllocClist or StrToCL. RESULTS byte - The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). |
| byte = UnPutCLChar(cList) D0 EUNCTION Get a byte from the end of the character list described by the clist. INFUTS CLIST - The clist header used to manage this character list, as returned by AllocCList or StrToCL. RESULTS byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | Pute = UnbutCLAr (clist) Do FUNCTION Get a byte from the end of the character list described by the clist. INFUNS CLIST - The clist header used to manage this character list, as returned by AllocCList or StrIoCL. RESULTS Pyte - The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | byte = UrbutCLArr (clist) Do FUNCTION Get a byte from the end of the character list described by the clist. INFUNS CLIST - The clist header used to manage this character list, as returned by AllocClist or StrToCL. RESULTS byte - The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). |
| byte = UnPutClOnar(clist) Dy EUNCTION Get a byte from the end of the character list described by the clist. INPUTS CLIST - The clist header used to manage this character list, as returned by AllocClist or StrToCL. RESULTS byte - The byte from the end of the character list. If no diata is available, the upper three bytes are set (longword is -1). | Dyte = UnbutCLChar (clist) Dy WOTTON Out a byte from the end of the character list described by the clist. INPUTS List - The clist header used to manage this character list, as returned by AllocClist or StrOcL. RESULTS Dyte - The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | byte = UnbutCLChar (clist) Do EUNCTION Get a byte from the end of the character list described by the clist. INPUTS Clist - The clist header used to manage this character list, as returned by AllocClist or StrOcL. RESULTS byte - The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). |
| byte = UnPutCLChar (clist) DD A0 EUNCTION Get a byte from the end of the character list described by the clist. INPUTS GLIST. The clist header used to manage this character list, as returned by AllocClist or StrfocC. RESULIS Pyte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | Putcal byte = Unbutcachar (clist) Do | byte = UnPutCLChar (clist) Do |
| byte = UnPutGLGhar(cList) D0 FUNCTION Gat a byte from the end of the character list described by the clist. IMPUTS CLIST The clist header used to manage this character list, as returned by Allocalist or Stroca. RESULIS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | Pyte = UnPutCLChar(clist) DO | byte = UnPutGLChar(cList) D0 FUNCTION Gat a byte from the end of the character list described by the clist. IMPUTS CLIST. The clist header used to manage this character list, as returned by AllocList or StrToCL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). |
| byte = UnPutGChar (cList) Byte from the end of the character list described by the clist. INPUTS CLIST. The clist header used to manage this character list, as returned by AllocList or Stroct. RESULTS byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | byte = UnPutCLChar(cList) EUNCION Get a byte from the end of the character list described by the clist. INPUTS CList . The clist header used to manage this character list, as returned by AllocClist or StrToCL. RESULTS byte . The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | byte = UnPutGChar(cList) D0 EUNCIGN Get a byte from the end of the character list described by the clist. INPUTS CList. The clist header used to manage this character list, as returned by AllocCList or StrToCL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). |
| FUNCTION Get a byte from the end of the character list described by the clist. INPUTS Clist. The clist header used to manage this character list, as returned by AllocList or StricC. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | FUNCTION Cot a byte from the end of the character list described by the clist. INPUTS Clist. The clist header used to manage this character list, as returned by AllocClist or StrToCL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | FUNCTION Get a byte from the end of the character list described by the clist. INPUTS GLIST. The clist header used to manage this character list, as returned by AllocClist or StrToCL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). |
| FUNCTION Cot a byte from the end of the character list described by the clist. INPUTS Clist. The clist header used to manage this character list, as returned by AllocClist or StrToCL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | FUNCTION FUNCTION Got a byte from the end of the character list described by the clist. INPUTS GLIST. The clist header used to manage this character list, as returned by AllocList or StrToCL. RESULTS byte The byte from the end of the character list, if no data is available, the upper three bytes are set (longword is -1). | FUNCTION Cot a byte from the end of the character list described by the clist. INPUTS Clist. The clist header used to manage this character list, as returned by AllocList or StrToCL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). |
| SUNCESS Whyte = UnPutCLChar (clist) By the from the end of the character list described by the clist. Get a byte from the end of the character list described by the clist. INPUTS CList - The clist header used to manage this character list, as returned by AllocClist or StrToCL. RESULTS byte The byte from the end of the character list. If no data is available, the upper three bytes are set (longword is -1). | SINCESIS Subtres byte = UnPutCLChar (clist) Byte = UnPutCLChar (clist) Cost a byte from the end of the character list described by the clist - INPUTS Clist - The clist header used to manage this character list, as returned by AllocClist or StrToCL. RESULTS byte The byte from the end of the character list. If no clata is available, the upper three bytes are set (longword is -1). | SINCESIS Subtres of the character list described by the clast trom the end of the character list described by the clast. INPUTS Clast as returned by AllocList or StrfocL. RESULTS byte The byte from the end of the character list, as returned by AllocList or StrfocL. RESULTS byte (longword is -1). |

RESULTS error

-The word to add to the beginning of the character list

The clist header used to manage this character list, as returned by AllocList or StrToCL.

INPUTS cList -

word

FUNCTION
Add a word to the beginning of the character list described by the clist.

non-zero indicates the number of bytes not added.

Partial words are not added, so error is always zero or two.

clist.llbrary/UnGetCLMord

UnCetCLMord - add a word to the beginning of a character list

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clist.library/UnGetCLWord

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diskfont.library/AvailFonts buffer indicates that it exists as an entry in a font contents file -- the underlying font file has not been if non-zero, this indicates the number of bytes needed for AvailFonts in addition to those supplied. Thus structure elements were not returned because of types - AFE_MEMORY is set to search memory for fonts to fill-the structure, AFE_DISK is set to search the disk for fonts to fill the structure. Both can be specified. AvailFonts elements, There will be duplicate entries for fonts found both in memory and on disk, differing only by type. The existance of a disk font in the AvailFonts - build an array of all fonts in memory / on disk via OpenDiskFont, those already in memory are accessed via OpenFont. The TextAttr structure required by the open calls is part of the information AvailFonts supplies. checked for validity, thus an OpenDiskFont of it may buffer - filled with struct AvailFontsHeader followed by the AvailFonts fills a user supplied buffer with the structure, described below, that contains information about all the fonts available in memory and/or on disk. Those fonts available on disk need to be loaded into memory and opened buffer - memory to be filled with struct AvailFontsHeader followed by an array of AvailFonts elements, which contains entries for the available fonts and their bufBytes - the number of bytes in the buffer Dec 3 17:04 1985 diskfont.doc Page 2 insufficient bufbytes. diskfont.library/AvailFonts fa11. error FUNCTION RESULTS Dec 3 17:04 1985 diskfont.doc Page 1 diskfont.library/AvailFonts
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diskfont.library/OpenDiskFont

diskfont.library/OpenDiskFont

OpenDiskFont - load and get a pointer to a disk font.

SYNOPSIS

Z

font = OpenDiskFont(textAttr)
D0 2

FUNCTION

This function finds the font with the specified textAttr on disk, loads it into memory, and returns a pointer to the font that can be used in subsequent SetFont and CloseFont calls. It is important to match this call with a corresponding CloseFont call for effective management of font memory.

If the font is already in memory, the copy in memory is used. The disk copy is not reloaded.

INPUTS

textAttr - a TextAttr structure that describes the text font attributes desired.

EXCEPTIONS

DO is zero if the desired font cannot be found.

Dec 4 19:33 1985 exec.doc Page 2 Exec/SetSignal
Exec/SetSR
Exec/SetTaskPr1
Exec/Stanal
Exec/Sumilbrary
Exec/Sumilbrary
Exec/SuperState Exec/Wait Exec/WaitIO Exec/WaitPort

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Exec/CettC
Exec/CettSe
Exec/Remised
Exec/Remise

Exec/SetExcept
Exec/SetFunction
Exec/SetIntVector

| Dec 4 09:33 1985 exec.doc Page 4 | |
|---|--------------|
| NAME AddRead insert node at the head of a list | Exec/Addiesd |
| SYNOPSIS AddHead(11st, node) A0 A1 | · |
| FUNCTION Add a node to the head of a doubly linked list. | |
| INPUTS list - a pointer to the target list header node - the node to insert at head | |
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| Dec 4 09:33 1985 exec.doc Page | Exec/AddintServer Exec/Addi.ibrary NAWE Addi.ibrary add a library add a | SYNOPSIS AddLibrary (library) Al | FUNCTION This function adds a new lib available to everyone. The called at this time. It will library name list, and the called at the called the called at the called | INPUT | SEE A | | | | | | | |
|----------------------------------|---|---|--|---|--|--|--|---|--|-----------------------|--|--|
| Dec 4 09:33 1985 exec.doc Page 5 | Exec/AddintServer NAME AddintServer add an interrupt server to the system | SYNOPSIS AddIntServer (intNum, interrupt) D0-0:4 Al | FUNCTION This function adds a new interrupt server to a given server chain. The node is located on the chain in a priority dependent position. Higher priority nodes will be serviced first. | If this server is the first one, interrupt will be enabled on this chain. | Servers are called with the following register conventions: D0 - scratch D1 - scratch | A0 - scratch A1 - server data segment pointer (scratch) | AS - jump vector register (scratch) A6 - library base pointer (scratch) | all other registers - must be preserved | INPUTS intNum - the Portia interrupt bit (014) interrupt - pointer to an interrupt server node | SEE ALSO RemIntServer | | |

| Dec 4 09:33 1985 exec.doc Page 8 | Exec/AddResource NAME AddResource add a resource to the system | SYNOPSIS AddResource (resource) A1 | FUNCTION This function adds a new resource to the system and makes it available to other users. The resource should be ready to be called at this time. | INPUTS resource - pointer to a properly initialized resource node SEE ALSO | RemResource | | | | | | |
|-----------------------------------|--|------------------------------------|--|--|---|----------------------------|--|--|--|--|--|
| .Dec 4 09:33 1985 exec.doc Page 7 | Exec/AddPort NAME AddPort add a message port to the system SYNDERS | AddPort (port) AddPort (port) | FUNCTION This function attaches a message port structure to the system's message port list. The name and priority fields of the port structure should be initialized prior to calling this function. If the user does not require the | | INPUTS port - pointer to a message port | SEE ALSO RemPort, FindName | | | | | |

Exec/AddResource

| WANT Addrail spend node to tail of a list Addrail spend node to tail of a list STATESIS Addrail [ist, node) Addrail [ist, node) Addrail [ist, node) Add a node to the tail of a doubly linked list. INFUTS INFUTS INFUTS Insert at tail node . the node to insert at tail | Dec 4 09:33 1985 exec.doc Page 9 | | <u>D</u> |
|--|---|-------------|--------------------|
| ll of a doubly linked list. The target list header seert at tail | | xec/AddTail | Exec// |
| ll of a doubly linked list. The target list header Sert at tail Sert at tail | NAME AddTail append node to tail of a list | | |
| the target list header seert at tail | SYNOPSIS AddTail(list, node) Ad Al | | |
| de - the node to insert at tail de - the node to insert at tail | FUNCTION Add a node to the tall of a doubly linked list. | | 5 |
| | INPUTS list - a pointer to the target list header node - the node to insert at tall | | |
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Exec/AddTask This function will temporarily use space from the new task's stack for the task's initial set of registers. This space is allocated starting at the SPREG location specified in the task control block (not from SPUPPER). This means that a task stack may contain static data put there prior to its execution. This is useful for providing initialized global variables or some tasks may want to use this space for passing the task its initial arguments. Certain fields of the task control block must be initialized and a minimal stack should be allocated prior to calling this function. AddTask -- add a task to the system AddTask(task, initialPC, finalPC) Al A2 A3 Add a task to the system. 'AddTask NOPSIS NCTION 빛

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A task's initial registers are set to zero (except the PC). zero, the system will use a general finalizer. This pointer is placed on the stack as if it were the outermost return address. task - pointer to the task control block initialPC - the initial entry point finalPC - the finalization code entry point. If

IE ALSO RemTask

| Dec 4 09:33 1985 exec.doc Page 11 | Dec 4 09:33 1985 exec.doc Page 12 |
|---|---|
| | |
| Exec/Allocate Exec/Allocate | Exec/AllocEntry Exec/AllocEn |
| NAME Allocate allocate a block of memory | NAME AllocEntry allocate many regions of memory |
| SYNOPSIS memoryBlock = allocate(freeList, byteSize) D0 D0 A0 | SYNOPSIS memList = AllocEntry (memList) D0 A0 |
| FUNCTION This function is used to allocate blocks of memory from a given free memory pool. It will return the first free block that is greater than or equal to the requested size. | FUNCTION This routine takes a memList structure and allocates enough memory to hold the required memory as well as a MemList structure to keep track of it. These MemList structures may be linked together in a task control block to keep |
| All blocks, whether free or allocated, will be block aligned; hence, all allocation sizes are rounded up to the next block even value (e.g. the minimum allocation resolution is 8 bytes). | track of the total memory usage of this task. INPUTS memList A memList structure filled in with memEntry structures. |
| This function, when used in conjunction with a private free list, can be used to manage an application's internal data memory. | RESULIS memList A different memList filled in with the actual memory allocated, and their sizes. If enough memory cannot be obtained, then the |
| IMPUTS freeList - points to the memory list header byteSize - the size of the desired block in bytes | requirements of the falled allocation are returned and bit 31 is set. EXAMPLES |
| RESULI memoryBlock - a pointer to the just allocated free block. If there are no free regions large enough to satisfy the request, return zero. If the amount of requested memory is invalid, return zero. | The user wants five regions of 2, 4, 8, 16, and 32 bytes in size with requirements of MEME_CIEAR, MEME_PUBLIC, MEME_CHIP.OR.MEME_CIEAR, MEME_FAST.OR.MEME_CIEAR, and MEME_PUBLIC.OR.MEME_CIEAR respectively. The following code fragment would do that: |
| EXCEPTIONS If the free list is corrupt, the system will panic. | scl: LN_SIZE * reserve 5 * number c |
| SEE ALSO Deallocate | MEME_CLEAR 2 MEME_PUBLIC 4 |
| | DC.L MEME_CAILF.CM.MEME_CLEAR " entry #2 DC.L MEME_FAST.OM.MEME_CLEAR " entry #3 DC.L 16 DC.L MEME_PUBLIC.OM.MEME_CLEAR " entry #4 DC.L 32 |
| | start: LEA MemListDecl,A0 CALLIB LVOAllocEntry,A5 |
| | BCLR.L #31,D0 BEQ.S success |
| | Type of memory that we failed on is in D0 |
| | |

Exec/AllocEntry

| Dec 4 09:33 1985 exec.doc Page 14 Exec/AllocMem NAVE AllocMem allocate memory given certain requirements SYNOPSIS memoryBlock = AllocMem(byteSize, requirements) D0 D1-0:31 FUNCTION This is the memory allocator to be used by system code and applications. It provides a means of specifying whether the allocation should be made in a memory area accessible to the chips, or accessible to shared system code that needs to be compatibable with memory mapped systems. Memory is allocated based on the "requirements" listed. The rule is that (requirements & attributes) == requirements for any particular memory block. | with the requested attributes and room for the memory request. INPUTS byteSize - the size of the desired block in bytes This number is rounded up to the next larger block size for the actual allocation. requirements - (still in flux) (see IA_Structs for bit definitions) MEMB_PUBLIC: memory must not be mapped, swapped, or otherwise made non-addressable. ALL MEMORY THAT IS REFERENCED VIA INTERRUPTS AND/OR BY OTHER TASKS MUST BE EITHER PUBLIC OR LOCKED INTO MEMORY! This includes both code and data. | MEMB_CHIP: Only certain parts of memory are reachable by the special chip sets' DWA circuitry. Anything that will use on-chip DWA must be in memory with this attribute. DWA includes screen memory, things that are blitted, audio blocks, raw disc buffers, etc. MEMB_FAST: This is non-chip memory. It is possible for the processor to get locked out of chip memory under certain conditions. If one cannot accept these delays, then one should use FAST memory (by default the system will allocate from FAST memory first anyway). |
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| UBC # 09:33 1963 6X6C.doc rays to |
|---|
| Exec/AllocSignal |
| NAME AllocSignal allocate a signal bit |
| SYNOPSIS signalNum = AllocSignal(signalNum) D0 |
| FUNCTION Allocate a signal bit from the current tasks pool. Either a particular bit, or the next free bit may be allocated. The signal associated with the newly allocated bit will be properly initialized (cleared). |
| If the signal is already in use (or no free signals are available) a -1 is returned. |
| This function can only be used by the currently running task. |
| WARNING Signals may not be allocated or freed from exception handling code. |
| INPUTS signalNum - the desired signal number {of 031} or -1 for no preference. |
| RESULTS signalNum - the signal bit number allocated {031}. If no signals are available, this function returns -1. |
| SEE ALSO FreeSignal |
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The mamory will be initialized to all zeros.

MEMB_CLEAR:

RESULT

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memoryBlock - a pointer to the allocated free block.

If there are no free regions large enough to satisfy the request (or if the amount of requested memory is invalid), return zero.

EXAMELES
AllocHem(321, MEMB_CHIP) - private chip memory
AllocHem(25, MEMB_FUBLIC) - a "public" system structure that
does not require chip memory.

EXCEPTIONS
If the free list is corrupt, the system will panic.

SEE ALSO Allocabs, FreeMem

| Dec 4 09:33 1985 exec.doc Page 18 | Exec/AllocTrap Exec/AvailWem | NAME AvailMem memory available given certain requirements | SYNOPSIS size = AvailMem(requirements) D0 D1 | FUNCTION This function returns the size of memory given certain requirements. INPUTS | requirements - a requirements mask as specified in AllocMem RESULT size - total free space remaining | | | 8 2. | • | | | |
|-----------------------------------|------------------------------|---|---|---|---|---|--|--|-------------------|--|--|--|
| Dec 4 09:33 1985 exec.doc Page 17 | Exec/AllocTrap | NAME AllocTrap allocate a processor trap vector | SYNOPSIS trapNum = AllocTrap(trapNum) D0 D0 | FUNCTION Allocate a trap number from the current task's pool. These trap numbers are those associated with the 68000 TRAP type instructions. Either a particular number, or the next free number may be allocated. | If the trap is already in use (or no free traps are available) a -1 is returned. This function can only be used by the currently running task. | WARNINC Signals may not be allocated or freed from exception handling code. | INPUTS trapNum - the desired trap number {of 015} or -1 for no preference. | RESULTS trapNum - the trap number allocated {of 015}. If no traps are available, this function returns -1. | SEE ALSO FreeTrap | | | |

Exec/AvailMem

| Dec 4 09:33 1985 exec.doc Page 20 | ause Exec/CheckIO | NAME CheckIO get the IO request status | SYNOPSIS result = CheckIO(10Request) D0 A1 | FUNCTION This function determines the current state of an I/O request and returns FALSE if the I/O has not yet completed. This function effectively hides the internals of the I/O completion mechanism. If the I/O has completed, CheckIO will not remove the returned IORequest from the reply port. This should be performed with Remove. | This function SHOULD NOT be used to busy loop, waiting for an IO to complete. | INPUTS iORequest - pointer to an I/O request block | RESULTS result - null if I/O is still in progress. Otherwise D0 points to the ICRequest block. | | | | |
|-----------------------------------|-------------------|--|--|--|---|---|--|--|--|--|--|
| Dec 4 09:33 1985 exec.doc Page 19 | Exec/Cause | NAME Cause cause a software interrupt | SYNOPSIS Cause (interrupt) Al | FUNCTION This function causes a software interrupt to occur. If it is called from user mode (and processor level 0), the software interrupt will pre-empt the current task. Currently only 5 software interrupt priorities are implemented: -32, -16, 0, +16, and +32. Priorities in between these values are truncated. Priorities outside the -32/+32 range are not allowed. | INPUTS Interrupt - pointer to a properly initialized interrupt node | | | | | | |

Exec/CheckIO

| 4 09:33 1985 exec.doc Page 22 CloseLibrary Exec/CloseLibrary | ary conclude access to a library ary (library) | function ary has b | JIS library - pointer to a library node ALSO | OpenLibrary | | | | |
|---|--|--------------------------|--|-------------|--|--|--|--|
| Dec 4 09:33 1985 Exec/CloseLibrary | NAME Clos SYNOPSIS Clos | FUNCTION This 11br | INPUTS 11bra SEE ALSO | Open | | | | |

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| | |
| Exec/ColdReset | Exec/Deallocate Exec/Deallocate |
| NAME ColdReset cause a system coldstart to occur | NAME Deallocate deallocate a block of memory |
| SYNOPSIS ColdReset() | SYNOPSIS Deallocate(freeList, memoryBlock, byteSize) |
| FUNCTION This function causes a coldstart system reset sequence identical to that which occurs at power-on. All current system activities will be stopped, and the entire software system will be re-initialized. Nothing will be preserved. This function will assert processor RESET to reset all hardware devices. | FUNCTION FUNCTION This function deallocates memory by returning it to the appropriate free memory pool. This function can be used to free an entire block allocated with the above function, or it can be used to free a sub-block of a previously allocated block. |
| EXCEPTION This function operates in supervisor mode only. Any attempt to perform this function from user mode will result in a privilege violation trap. | If memoryBlock is not on a block boundary (MEM_BLOCKSIZE) then it will be rounded down. Note that this will work correctly with all the memory allocation routines, but may cause surprises if one is freeing only part of a region. If byteSize is null, nothing happens. Also, the size of the block will be rounded up, so the freed block will fill an entire memory block. |
| | INPUTS freeList - points to the free list memoryBlock - memory block to return byteSize - the size of the desired block in bytes |
| | SEE ALSO Allocate |
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| Exec/Enqueue NAME Enqueue Insert or append node to a system queue SYNOPSIS Enqueue (list, node) A0 A1 FUNCTION Insert or append a node into a system queue. The insert is preformed based on the node priority it will keep the performed based on the node priority it will keep the performed based on the node priority it will keep the performed based on the node priority it will keep the performed based on the node with a lower priority. Hence a FIFO queue for nodes of equal priority INPUTS list - a pointer to the system queue header node - the node to enqueue |
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| NAME NAME Dolfo perform an I/O command and wait for completion STANDESIS arror = Dolfo(LoBequest) Do Al FUNCTON This function requests a device driver to perform the I/O command specified in the I/O request. This function will alvays block until the I/O request is completed. INPUTS LOBequest pointer to a properly initialized I/O request RESULTS error - see MaitIO SEE ALSO SEE ALSO SEE ALSO SER | | | |
|--|---|-----------|---|
| NAME NAME STATE OF THE STATE OF COMMENT AND COMMENT OF COMPOSITION STATE OF THE STATE OF COMPOSITION OF COMP | Exec/DoIO | Exec/DoI(| _ |
| error = DolO(10Request) Do Al FUNCTION This function requests a device driver to perform the I/O command specified in the I/O request. This function vill always block until the I/O request is completed. INPUTS INPUTS INPUTS GREQUES GREALIS GREALIS SEP ALSO SEP ALSO | | | |
| FUNCTION This function requests a device driver to perform the I/O command specified in the I/O request. This function will always block until the I/O request is completed. INPUTS JORquest - pointer to a properly initialized I/O request RESULTS error - see MaitIO SEE ALSO Sendio, MaitIO | SYNOPSIS error = DoIO(10Request) D0 A1 | | |
| INPUTS LORequest - pointer to a properly initialized I/O request RESULTS error - see WaitlO SEE ALSO Sendio, WaitlO | FUNCTION This function requests a device driver to perform the I/O command specified in the I/O request. This function vill always block until the I/O request is completed. | | |
| dIO, | INPUTS 1ORequest - pointer to a properly initialized I/O request | | |
| SendIO, MaitIO | RESULTS error - see WaltIO | | |
| | SEE ALSO SendIO, WaitIO | | |
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| Dec 4 09:33 1985 exec.doc Page 28 | |
|---|----|
| Exec/FindPort Exec/FindPort | ., |
| NAME FindPort find a given system message port | |
| SYNOPSIS port = FindPort(name) D0 A1 | |
| EUNCTION This function will search the system message port list for a port with the given name. The first port matching this name will be returned. | |
| INPUT name - name of the port to find | |
| RETURN port - a pointer to the message port, or zero if not found. | |
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Exec/FindName

FindName -- find a system list node with a given name

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Exec/FindName

NAME

SYNOPSIS
node = FindName(start, name)
D0 A1

FUNCTION

Traverse a system list until a node with the given name is found. To find multiple occurances of a string, this function may be called with a node starting point.

start - a list header or a list node to start the search (if node, this one is skipped)
name - a pointer to a name string terminated with null

node - a pointer to the node with the same name else zero to indicate that the string was not found.

RESULTS

INPUTS

Exec/FindTask

NAME FindTask -- find a task with the given name or find oneself

SYNOPSIS task = FindTask(name) D0 A1

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Exec/FindTask

FUNCTION

This function will check all task queues for a task with the given name, and return a pointer to its task control block. If a null name pointer is given a pointer to the current task will be returned.

name - pointer to a name string

RESULT task - pointer to the task

| Dec 4 09:33 1985 exec.doc Page 31 | Dec 4 09:33 1985 exec.doc Page 32 |
|---|---|
| Exec/FreeMem | Exec/FreeSignal |
| NAME FreeMem deallocate with knowledge | NAME FreeSignal free a signal bit |
| SYNOPSIS FreeMem (memoryBlock, byteSize) Al D0 | SYNOPSIS FreeSignal (signalNum) D0 |
| <pre>EUNCTION</pre> | FUNCTION This function frees a previously allocated signal bit for reuse. This call must be performed while running in the same task in which the signal was allocated. |
| INFULS memoryBlock - memory block to free If the memoryBlock previously returned by an allocation routine. byteSize - the size of the block in bytes | WARNING Signals may not be allocated or freed from exception handling code |
| SEE ALSO Allochem, Allocabs | signalNum - the signal number to free {031} |
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| Dec 4 09:33 1985 exec.doc Page 34 | |
|---|------------|
| Exec/CatCC | Exac/CatOC |
| NAME GetCC get condition codes in a 68010 compatible way. | |
| SYNCPSIS conditions = GetCC() D0 | |
| FUNCTION This function provides a means of obtaining the CPU condition codes in a manner that will make 68010 upgrades transparent. | |
| INPUTS | |
| RESULIS conditions - the 68000/68010 condition codes | |
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| Dec 4 09:33 1985 exec.doc Page 35 | Dec 4 09:33 1985 exec.doc Page 36 |
|--|---|
| Exec/CetHsg Exec/CetHsg | Exec/InitStruct |
| NAME GetWag get next message from a message port | NAME InitStruct - initialize memory |
| SYNCPSIS madsage = GetHag (port) D0 | SYNOPSIS InitStruct(initTable, memory, Al Al |
| FUNCTION This function receives a massage from a given message port. It provides a fast, non-copying message receiving mechanism. | FUNCTION Clear a memory area except the values are provided in the initialization table has better |
| The received message is removed from the message port. | איזיבימיזיקטרוסון נשחום וושף הארם |
| This function will not wait. If a message is not present this function will return zero. If a program must wait for a message, it can Wait on the signal specified for the port or use the WaitPort function. There can only be one task waiting for any given port. | a byte giver load count word into next long Not all combinations are suppo |
| Gatting the message does not imply that the message is now free to be reused. When the receiver is finished with the message, it may ReplyKsg it. | (Femory), and is initially zer (InitTable) contains byte com interpreted as follows: |
| INPUT port - a pointer to the receiver message port | e dest. next |
| RESULT message - a pointer to the first message available. If there are no messages, return zero. | • |
| SEE ALSO PutMsg, ReplyMsg, WaitPort | 00 long, from the nex 01 word, from the nex 10 byte, from the nex 11 byte, from the nex 11 brown. |
| | • |
| | initTable commands are always Given destination offsets are |
| | The command 0000000 ends the lifyou really want to copy one |
| | 24 bit APTR not supported for 66 |
| | INPUTS InitTable - the beginning of the Memory with. Must be captured byte initialization is memory - the beginning of the memory - the state of memory if size - the size of memory, which initializing it via the captured by the size of memory, which initializing it via the captured by the size of memory, which is the size of memory. |
| | |

Exec/InitStruct

| 38 Exac/Insert | | Insert a node into a doubly linked list AFTER a given node position. Insertion at the head of a list is performed by passing a zero value for listNode. S list - a pointer to the target list header node - the node to insert. | |
|--|--|--|--|
| Dec 4 09:33 1985 exec.doc Page 38 Exec/Insert | NAME Insert insert a node into a list SYNOPSIS Insert(list, node, listNode) A0 A1 A2 | FUNCTION Insert a node into a doubly linked list AF node position. Insertion at the head of a by passing a zero value for listNode. INPUTS list - a pointer to the target list header node - the node to insert listNode - the node to insert | |

memory is not cleared before initializing. Size is rounded down to the nearest even number before use.

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IMPLEMENTATION

DO clear size, command, count and repeat
D1 destination offset, command type
A0 current Memory pointer
A1 current InitTable pointer

D0, D1, A0, A1 destroyed

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Exec/MakeLibrary

Exec/MakeL1brary

SEE

MakeLibrary -- construct a library

SYNOPSIS

8

FUNCTION

This function is used for constructing a library vector and data area. Space for the library is allocated from the system's free memory pool. The size fields of the library are filled. The data portion of the library is initialized. A library specific entrypoint is called (init) if present.

INPUTS

- pointer to an array of function pointers or function displacements. If the first word of the array is -1, then the array contains relative word displacements (based off of vectors); otherwise, the array contains absolute function pointers. Vectors

structure - points to an "InitStruct" data region. If null, then it will not be called.

the library to the system. If null, it will not be called. When it is called, it will be called with the libAddr in D0, and its result will be the result an entry point that will be called before adding of this function. init

the size of the library data area, including the standard library node data. dSize -

 pointer to a memory segment list (used by DOS)
 This is passed to a library's init code. segilist

RESULT

library - the reference address of the library. This is the address used in references to the library, not the beginning of the memory area allocated.

EXCEPTION

If the library vector table require more system memory than is available, this function will cause a system panic.

SEE ALSO

InitStruct

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Exec/OpenDev1ce

Exec/OpenDevice

MAR

OpenDevice -- gain access to a device

SYNOPSIS

error = OpenDevice(devName, unitNumber, 10Request, flags)
D0 A1 D1

FUNCTION

This function opens the named device/unit and initializes the given I/O request block.

Ë unitNumber - the unit number to open on that device. format of the unit number is device specific.

devName - requested device name

INPUTS

iORequest - the I/O request block to be returned with appropriate fields initialized.

flags - additional driver specific information. This is sometimes used to request opening a device with exclusive access.

RESULTS

error - zero if successful, else an error is returned

SEE ALSO

CloseDevice

| Dec 4 09:33 1985 exec.doc Page 41 | Dec 4 09:33 1985 exec.doc Page 42 |
|--|---|
| Exec/OpenLibrary | Exec/OpenResource |
| NAME OpenLibrary gain access to a library | NAME OpenResource gain access to a resource |
| SYNOPSIS library = OpenLibrary(libName, version) D0 A1 D0 | SYNOPSIS resource = OpenResource (resName) D0 |
| FUNCTION This function returns a pointer to a library that was previously installed into the system. If the requested library is exists, and if the library version is greater than or equal to the requested version, then the open will succeed. | FUNCTION This function returns a pointer to a resource that was previously installed into the system. INPUTS resName - the name of the resource requested. |
| IMPUTS 11bName - the name of the library to open | RESULTS resource - if successful, a resource pointer, else null |
| version - the version of the library required. | SEE ALSO CloseResource |
| Library - a library pointer for a successful open, else zero | |
| CloseLibrary | |
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| Dec 4 09:33 1985 exec.doc Page 44 | Exec/PutMsg Exec/RemDevice | NAME RemDevice remove a device from the system | SYNOPSIS error = Rembevice (device) D0 A1 | Ven message port. This function removes an existing device from the system. This function deletes the device from the device name list. | a time. The rause messages INPUT | r. Of course this Proceedings the error - zero if successful, else an error is returned | it will be sent back SEE ALSO AddDevice | st to occur alue set in | | | |
|-----------------------------------|----------------------------|--|--|---|--|--|---|---|---|------------------------------|--|
| 4 09:33 1985 exec.doc Page 43 | Exac/PutHsg | NAME PutMsg put a message to a message port | SYNOPSIS PutWsg(port, message) A0 A1 | FUNCTION This function attaches a message to a given message port. It provides a fast, non-copying message sending mechanism. | Massages can be attached to only one port at message body can be of any size or form. Be are not copied, cooperating tasks share the same of copied, cooperating tasks share the same of t | depends on the message handling conventions setup by the involved tasks. | the message is replied by the receiver, to that port. | Any one of the following actions can be set to occur when a message is put: 1. no special action 2. signal a given task 3. cause a software interrupt The action is selected depending on the value set in PB_ACTION of MP_FLACS. | INPUT port - pointer to a message port message - pointer to a message | SEE ALSO GetMsg, ReplyMsg | |

Exec/RemDevice

| NAVE RealintServer remove an interrupt server SYNOPSIS RemintServer (inthum, interrupt) BenintServer (inthum, interrupt) Do-0:4 Al EUNCTION This function removes an interrupt server node from the given server chain. If this server was the last one one the chain interrupts will be disabled for inthum. INPURS INPURS INPURS INPURS INTERPRETED INTERPRET | |
|---|--|
| SYMCESIS RemintServer (intkum, interrupt) Dp-0.4 Al FUNCTION This function removes an interrupt server node from the given server chain. If this server was the last one one the chain interrupts will be disabled for inthum. INEUTS INTERIOR SEE ALSO AddintServer | |
| This function removes an interrupt server node from the given server chain. If this server was the last one one the chain interrupts will be disabled for linkum. INPUTS INPUTS INTERROR - pointer to an interrupt server node SEE ALSO AddintServer | IntServer(intNum, D0-0:4 |
| If this server was the last one one the chain interrupts vill be disabled for intNum. INPUTS INTHUM - the Portia interrupt bit (014) interrupt - pointer to an interrupt server node SEE ALSO AddintServer | FUNCTION This function removes an interrupt server node from the given server chain. |
| intNum - the Portia interrupt bit (0.14) interrupt - pointer to an interrupt server node SEE ALSO AddintServer | If this server was the last one one the chain interrupts will be disabled for intNum. |
| AddintServer | INPUTS intNum - the Portia interrupt bit (014) interrupt - pointer to an interrupt server node |
| | SEE ALSO AddintServer |
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Exec/RemHead

NAME Reminead -- remove the head node from a list

Exec/Remised

SYNOPSIS node = Remined(list) D0 A0

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FUNCTION

Get a pointer to the head node and remove it from the list.

RESULT node - the node removed or zero when empty list

INPUTS list - a pointer to the target list header

| Exec/Remove | | | | | | | | | _ | |
|--|--|---------------------------------|-------------------------------------|-------------------------------------|---|--|--|--|---|--|
| Dec 4 09:33 1985 exec.doc Page 48 Exec/Remove | NAME Remove remove a node from a list | SYNOPSIS Remove (node) A1 | FUNCTION Remove a node from a list. | INPUTS node - the node to remove | · | | | | | |

| Exac/RamPort NWE RemPort - remove a massage port from the system SYNCESIS RemPort (port) Al FUNCTION This function removes a massage port structure from the system's massage port list. Subsequent attempts to rendezvous by name with this port will fall. NPUTS port - pointer to a massage port SEE ALSO AddPort, FindPort | | Exec/RemPort | | Q | | | | | | |
|--|--------------|--------------|--------|--|---|----------------------------|--|--|--|--|
| | 4 09:33 1985 | ţ | Port (| FUNCTION This function removes a message port structure from the system's message port list. Subsequent attempts to rendezvous by name with this port will fail. | ř | SEE ALSO AddPort, FindPort | | | | |

Exec/RemTail

NAME RemTail -- remove the tail node from a list

SYNOPSIS node = Remfall(list) D0 A0

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Exec/Remfail

FUNCTION

Get a pointer to the tail node and remove it from the list.

IMPUTS list - a pointer to the target list header

| exec.doc Page 54 | | (; | This function requests the device driver to initiate the command specified in the given I/O request. The device will return regardless of whether the I/O has completed. | ter to an I/O request | | | | | | |
|--|-------------------------------------|-------------------------------------|--|---|--------------------------|--|--|---|--|--|
| Dec 4 09:33 1985 exec.doc Pac Exec/SandIO | NAME SendIO initiate an I/O command | SYNOPSIS SendIO(10Request) A1 | FUNCTION This function requests command specified in the will return regardless | INPUTS 10Request - pointer to an I/O request | SEE ALSO Dolo, Waltio | | | · | | |

Exec/ReplyMsg

NAME ReplyMsg -- put a message to its reply port

Exec/Replyffsg

SYNOPSIS ReplyMsg (message) Al

FUNCTION

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This function sends a message to its reply port. This is usually done when the receiver of a message has finished and wants to return it to the sender (so that it can be re-used or deallocated, whatever).

message - a pointer to the message

IMPGF

| Exec/SetExcept | , signalMask) D1 E2 D2 D3 D3 D4 D4 D5 D5 D6 D6 D6 D6 D7 | he signals specified in be effected | otion signals: | | |
|--|--|---|---|----------------------------|--|
| Dec 4 09:33 1985 exec.doc Page 55 Exec/SetExcept NAME SetExcept define certain signals to cause exceptions | oldSignals = SetExcept (newSignals, signalMask) D0 D1 FUNCTION This function defines which of the task's signals will cause an exception. When any of the signals occurs the task's exception handler will be dispatched. If the signal occurred prior to calling SetExcept, the exception will happen immediately. | INPUTS newSignals - the new values for the signals specified in signalMask. signalMask - the set of signals to be effected RESULTS oldSignals - the prior exception signals | EXAMPLE Get the current state of all exception signals: SetExcept(0,0) Change a few exception signals: SetExcept(\$1374,\$1074) | SEE ALSO Signal, SetSignal | |

Exac/SatFunction Setfunction is a functional way of changing those parts of a library that are checksummed. They are changed in such a way that the summing process will never falsely declare a library to be invalid. funcOffset - the offset that FuncEntry should be put at. SYNOPSIS
oldFunc = SetFunction(library, funcOffset, funcEntry)
D0 A1 A0.W D0 SetFunction -- change a function vector in a library INPUTS library - a pointer to the library to be changed Exec/SetFunction FUNCTION MARE

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funcEntry - pointer to new function

| Dec 4 09:33 1985 exec.doc Page 58 | Exec/SetSlgnal E | NAME SetSignal define the state of this task's signals | SYNOPSIS oldSignals = SetSignal (newSignals, signalMask) D0 D1 | FUNCTION This function defines the states of the task's signals. This function is considered dangerous. IMPUTS newSignals - the new values for the signals specified in signalMask - the set of signals to be effected RESULTS oldSignals - the prior values for all signals EXAMPLE Get the current state of all signals: SetSignal(0,0) Clear all signals: SetSignal(0,0) SEE ALSO Signal, Wait | |
|-----------------------------------|-------------------|---|---|--|--|
| Dec 4 09:33 1985 exec.doc Page 57 | Exec/SetIntVector | NAME SetIntVector set a system interrupt vector | SYNOPSIS oldInterrupt = SetIntVector(intNumber, interrupt) D0 D1 D1 D2 D2 D2 D3 | FUNCTION This function provides a mechanism for setting the system interrupt vectors. Both the code and data pointers of the vector are set to the new values. A pointer to the old interrupt structure is returned. When the system calls the spacified interrupt code the registers are setup as follows: Do - scratch Do - scratch (on entry: active portia interrupts) Ao - scratch (on entry: pointer to chiphase) Ai - scratch (on entry: interrupt's data segment) Ai - scratch (on entry: interrupt on call) Ai - scratch (on entry: interrupt but number (014) Interrupt - a pointer to a node structure confaining the handler's entry point and data segment pointer: It is a good idea to give the node a name so that other users may identify who currently has control of the interrupt. RESULT A pointer to the prior interrupt node which had control of this interrupt. | |

Exec/SetSignal

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| SetSR (oldSR, \$0700); |
| Setting (oldsit, \$0700); | Setting (older, \$9700); | Setting (olding, \$0700); | Setting (olding, \$0700); | Setting (olding, \$0700); |
| SetSR(oldSR, \$0700): | SetSR(oldSR, \$0700); | SetSR(oldSR, \$0700); | SetSR(oldSR, \$0700); | SetSR(oldSR, \$0700); SetSR(oldSR, \$0700); |
| Set.3R (old:R, \$0700); | SetSR (oldSR, \$0700); | SetSR (oldSR, \$0700); | SetSR (oldSR, \$0700); | Set:R (old:R, \$0700); |
| Set Encoassor Interrupts back to prior level: SetSR (oldSR, \$0700); | Set processor interrupts back to prior level: SetSR (oldSR, \$0700); | Set processor interrupts back to prior level: SetSR (oldSR, \$0700); | Set processor interrupts back to prior level: SetSR (oldSR, \$0700); | Set processor interrupts back to prior level: SetSR (oldSR, \$0700); |
| outs = Setts(0100, \$0700); Setts(olds, \$0700); Setts(olds, \$0700); | Set Incassor Interrupts back to prior level: SetSR (oldSR, \$0700); | Set SERE (6300, \$9770); Set processor interrupts back to prior level: SetSR (oldSR, \$0700); | Set SERE (6300, \$9770); Set processor interrupts back to prior level: SetSR (oldSR, \$0700); | Set Incasses interrupts back to prior level: SetSR (oldSR, \$0700); |
| oldSR = SetSR (\$0300,\$0700); SetSR (oldSR,\$0700); | oldR = SetsR(\$0300,\$0700); SetsR(oldSR,\$0700); SetsR(oldSR,\$0700); | oldSR = SetSR (\$0300,\$0700); SetSR (oldSR,\$0700); SetSR (oldSR,\$0700); | oldSR = SetSR (\$0300,\$0700); SetSR (oldSR,\$0700); SetSR (oldSR,\$0700); | oldR = SetSR (\$0300,\$0700); SetSR (oldSR,\$0700); |
| olds = SetSR (0300, 90700); Set processor Interrupts back to prior level: SetSR (oldsR, \$0700); | Set:R(oldSR,\$0700); Set:R(oldSR,\$0700); | SetSR (oldSR, \$0700); SetSR (oldSR, \$0700); | SetSR (oldSR, \$0700); SetSR (oldSR, \$0700); | oldS = SetSR (0300, \$0700); Set processor interrupts back to prior level: SetSR (oldSR, \$0700); |
| To change the processor interrupt level to 3: old&R = SetSR(\$930, \$9700); Set processor interrupts back to prior level: SetSR(oldSR, \$0700); | To change the processor interrupt level to 3: older = Seter (00100, \$0700); Set processor interrupts back to prior level: Setera (older, \$0700); | To change the processor interrupt level to 3: older = Sets((80300, \$9700); Set processor interrupts back to prior level: SetSR(oldSR, \$0700); | To change the processor interrupt level to 3: older = Sets((80300, \$9700); Set processor interrupts back to prior level: SetSR(oldSR, \$0700); | To change the processor interrupt level to 3: old&R = SeT&(\$40300, \$40700); Set processor interrupts back to prior level: SetSR(old&R,\$40700); |
| To change the processor interrupt level to 3: old&R = SetsR (0300, \$0700); SetsR (oldSR, \$0700); SetsR (oldSR, \$0700); | To change the processor interrupt level to 3: oldSR = SetSR (0310, \$0700); SetSR (oldSR, \$0700); SetSR (oldSR, \$0700); | To change the processor interrupt level to 3: oldSR = SetSR (60310, \$0700); SetSR (oldSR, \$0700); SetSR (oldSR, \$0700); | To change the processor interrupt level to 3: oldSR = SetSR (60310, \$0700); SetSR (oldSR, \$0700); SetSR (oldSR, \$0700); | To change the processor interrupt level to 3: oldSR = SetSR (9300, \$9700); SetSR (oldSR, \$0700); SetSR (oldSR, \$0700); |
| Our answer Section (), 0); To change the processor interrupt level to 3: oldSR = SetSR (\$1000, \$10700); Set processor interrupts back to prior level: SetSR (oldSR, \$0700); | To change the processor interrupt level to 3: oldSR = SetSR (#0300, #0700); Set processor interrupts back to prior level: SetSR (oldSR, #0700); | Contential Section (1) and the content of the conte | Contential Section (1) and the content of the conte | Our and Responsible Setting (1,0); To change the processor interrupt level to 3: oldSR = SetSR(\$10300, \$07000); Set processor interrupts back to prior level: SetSR(oldSR, \$0700); |
| CurrentSR = SetSR(0,0); To change the processor interrupt level to 3: oldSR = SetSR(80300,\$90700); Set processor interrupts back to prior level: SetSR(oldSR,\$0700); | CurrentSR = SetSR(0,0): I change the processor interrupt level to 3: oldSR = SetSR(0300, \$0700); Set processor interrupts back to prior level: SetSR(oldSR, \$0700); | CurrentSR = SetSR(0,0): To change the processor interrupt level to 3: oldSR = SetSR(60300, \$0700); Set processor interrupts back to prior level: SetSR(oldSR, \$0700); | CurrentSR = SetSR(0,0): To change the processor interrupt level to 3: oldSR = SetSR(60300, \$0700); Set processor interrupts back to prior level: SetSR(oldSR, \$0700); | CurrentSR = SetSR(0,0): 10 change the processor interrupt level to 3: oldSR = SetSR(60300, \$0700); Set processor interrupts back to prior level: SetSR(oldSR, \$0700); |
| To dange the processor interrupt level to 3: To change the processor interrupt level to 3: olds: Sets(0300, 90700); Set processor interrupts back to prior level: Sets(olds: \$0700); | To dange the processor interrupt level to 3: Of change the processor interrupt level to 3: olds: Sets (60300, 90700); Set processor interrupts back to prior level: Sets (olds: 40700); | To get the currents a SetSR (0, 0); To change the processor interrupt level to 3: olds SetSR (0300, 90700); Set processor interrupts back to prior level: SetSR (oldsR, \$0700); | To get the currents a SetSR (0, 0); To change the processor interrupt level to 3: olds SetSR (0300, 90700); Set processor interrupts back to prior level: SetSR (oldsR, \$0700); | To get the currents a SetsR(0, 0); To change the processor interrupt level to 3: olds = SetsR(0300, 90700); Set processor interrupts back to prior level: SetSR(oldsR, \$0700); |
| To get the current SR: |
| To get the current SR: CurrentSR = SetSR(0,0); To change processor interrupt level to 3: oldsR = SetSR(80300, \$0700); Set processor interrupts back to prior level: SetSR(oldSR,\$0700); | Courtents R: Courtents R: SetsR(0); To change the processor interrupt level to 3: olds E SetsR(\$0300,\$0700); Set processor interrupts back to prior level: SetsR(oldsR,\$0700); | SetTR (oldSR, \$0700); SetTR (oldSR, \$0700); SetTR (oldSR, \$0700); SetTR (oldSR, \$0700); | SetTR (oldSR, \$0700); SetTR (oldSR, \$0700); SetTR (oldSR, \$0700); SetTR (oldSR, \$0700); | Set The current SR: Current SR = Set SR (0); To change the processor interrupt level to 3: old SR = Set SR (80300, \$0700); Set processor interrupts back to prior level: Set SR (old SR, \$0700); |
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| /Sumf.ibrary Exec/Sumf.ibrary | AME SumLibrary compute and check the checksum on a library | NOPSIS SumLibrary (library) Al | UNCTION Sumilbrary computes a new checksum on a library. It can also be used to check an old checksum. If an old checksum does not match and the library has not been marked as changed then the system will alert the user. | WPUTS library - a pointer to the library to be changed | CCEPTIONS An alert will occur if the checksum fails. | | | |
|-------------------------------|---|--------------------------------------|---|---|---|--|--|--|
| Exec/SumLibrary | NAME | SYNOPSIS | FUNCTION Sumf. also does chan | INPUTS 11br | EXCEPTIONS An ale | | | |

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|---|--|
| Dec 4 09:33 1985 exec.doc Page 63 | Dec 4 09:33 1985 exec.doc Page 64 |
| Exec/SuperState | Exec/UserState |
| NAME SuperState enter supervisor state with user stack | ate return to user state with user stack |
| SYNOPSIS oldSymStack = SuperState() D0 | SYNOPSIS UserState (sysStack) D0 |
| EUNCTION Enter supervisor mode while running on the user's stack. The user still has access to user stack variables. Be careful though, the user stack must be large enough to accommodate space for all interrupt data this includes all possible nesting of interrupts. This function is a no op when called from supervisor state. RESULTS oldsysStack - system stack pointer Save this. It will come in useful when you return to user state. If the system is already in supervisor mode, oldsysStack is zero. | FUNCTION Return to user state with user stack, from supervisor state with user stack. This function is normally used in conjunction with the SuperState function above. This function must not be called from the user state. INPUT SysStack - supervisor stack pointer SEE ALSO SuperState |
| User State User State | |
| | |

| safer to use the Walf function, which will return when any particular signal is received. This is how I/O timeouts can be properly handled. INPUTS IORequest - pointer to an I/O request block RESULTS error - zero if successful, else an error is returned SEE ALSO SendIO | TANDAL STATES | This function should be used with care, as it does not return until the I/O request completes; if the I/O never completes, this function will never return, and your task will hang. If this situation is a possibility, it is safer to use the Wait function, which will return when any nerticular storal is received. This is how I/O timecuts | FUNCTION This function waits for the specified I/O request to complete. If the I/O has already completed, this function will return immediately. | SYNOPSIS error = WaltIO(10Request) D0 A1 | NAME WaitIO wait for completion of an I/O request | Exec/MaitIO Exec/MaitIO | |
|--|---------------|---|--|--|---|-------------------------|--|
|--|---------------|---|--|--|---|-------------------------|--|

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| Exec/MaitPort NAVE MAITPORT wait for a given port to be non-empty STOCESIS MAITPORT wait for a given port to be non-empty STOCESIS MAITPORT wait for a given port to be non-empty STOCESIS MAITPORT wait for the given port to become non-empty. If necessary, the Mait function will be called to wait for the port signal. If a message is already present at the port, this function will return immediately. The return value is always a pointer to the first message queued (but if is not removed from the queue.) INPUT PORT - a pointer to the message port RETURN message - a pointer to the first available message SEE ALSO Cethse |
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| | Dec 3 17:05 1985 graphics.doc Page 4 |
|---|---|
| graphics.library/AddAnimOb | graphics.library/AddBob |
| f AnimObs | NAME AddBob adds a Bob to current gel list |
| | SYNOPSIS AddBob (Bob, RPort) |
| o by animicay ants | FUNCTION Sets up the system Bob flags, then links this gel into the list via AddVSprite |
| before you call here, | IMPUTS Bob = pointer to the Bob structure to be added to the gel list RPort = pointer to a RastPort structure |
| i to the list be list (NULL if none) | RESULT Nothing |
| | BUCS None known |
| | SEE ALSO AddVSprite |
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BUCS

RESULT Nothing None Janowa

SEE ALSO Nothing

FUNCTION
Links this AnimCb into the current list pointed to by animKey
Initializes all the Timers of the AnimCb's components
Calls AddBob with each component's Bob
Note that the RPort must be correctly initialized before you call here,
including a valid GelsInfo

AddwnimOb -- add an AnimOb to the linked list of AnimObs

AddAnimOb (anOb, anKey, RPort) a0 a1 a2

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graphics.library/AddAnimOb

INPUTS

anOb = pointer to the AnimOb structure to be added to the list

anKey = address of a ptr to the first AnimOb in the list (NULL if none)

RPort = pointer to a valid RastPort

| graphics.library/AddVSprite graphics.library/AddVSprite |
|--|
| NAME AddVSprite add a VSprite to the current gel list |
| SYNOPSIS AddVSprite(VS, RPort) as called by C |
| FUNCTION Sets up the system VSprite flags Links this VSprite into the current gel list using its Y,X |
| INPUTS VS = pointer to the VSprite structure to be added to the gel list RPort = pointer to a RastPort structure |
| RESULT Nothing |
| BUCS None known |
| SEE ALSO Nothing |
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graphics.library/AddFont

NAME
AddFont -- add a font to the system list

graphics.library/AddFont

SYNOPSIS
AddFont (textFont), GraphicsLib
Al A6

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FUNCTION

This function adds the text font to the system, making it available for use by any application. The font added must be in public memory, and remain until successfully removed.

INPUIS textFont structure in public ram.

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|--|--------|
| graphics.library/AndRectRegion graphics.library/AndRectRegion | legion |
| NAME AndRectRegion Perform 2d AND operation of rectangle with region, leaving result in region | ı |
| SYNCESIS AndRectRegion (region, rectangle) a0 al | |
| Function Clip away any portion of the region that exists outside of the rectangle. Leave the result in region. | |
| INPUTS region = pointer to Region structure rectangle = pointer to Rectangle structure | |
| BUCS | |
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graphics.library/Allockaster

Allockaster -- allocate space for a Bit Plane

SYNOPSIS
AllocRaster (width, height)
d0 d1

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graphics.library/Allockaster

FUNCTION
This function calls the memory allocation routines
to allocate memory space for a bitplane width bits
wide and height bits high.

Returns a pointer to the first word if successful. Return 0 if unable to allocate that amount of space.

| Dec 3 17:05 1985 graphics.doc Page 9 | Dec 3 17:05 1985 graphics.doc Page 10 |
|--|---|
| graphics.library/Animate graphics.library/Animate | graphics.library/AreaDraw |
| NAVE Animate processes every Animath in the current animation list | NAME AreaDraw add a point to a list of end points for arefill. |
| SYNCPSIS Animate (key, RPort) | SYNOPSIS error = (int) AreaDraw(rp, x, y) |
| FUNCTION For every AnimCb in the list - update its location and velocities - call the AnimCb's special routine if one is supplied - for each component of the AnimCb - if this sequence times out, switch to the new one - all this component's special routine if one is supplied - set the sequence's sprite's y, x coordinates based on all this | FUNCTION FUNCTION Add point to the vector buffer. INPUTS x,y are coordinates of a point in the raster |
| INPUTS Nowy = address of the variable that points to the head AnimCh RPort = pointer to the RastPort structure | rp points to a RastPort structure RETURNS 0 if no error |
| RESULT Nothing | SEE ALSO |
| BUCS None known | Areanove, intraves, Areanid |
| SEE ALSO Nothing | |
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|---|--|
| | |
| graphics.library/AreaEnd graphics.library/AreaEnd | graphics.library/AreaMove |
| NAME AreaEnd Process table of vectors and produce areafill | NAME AreaMove defines a new starting share in the vector 11. |
| SYNCPSIS AreaEnd (rp) At | SINOPSIS or a Arman Arm |
| FUNCTION Trigger the filling operation. | FUNCTION |
| Process the vector buffer and generate required fill into the raster planes. After the fill is complete reduitialize for the next Arabbone. Use the raster set in he Intithuse. | Close the last polygon and start a at (x,y). Enter necessary polbuffer. |
| areafill mask. | Closing a polygon may result in the another AreaDraw() to close previo |
| INPUTS rp points to a RastPort structure | INPUTS x,y are positions in the raster |
| SEE ALSO Inithrea, AreaMove, AreaDrav | RETURNS 0 if no error |
| | SEE ALSO Inithrea, AreaDraw, AreaEnd |
| | |
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| | |

graphics.library/AreaMove new starting point for a new the vector list. n and start another polygon Mccessary points in vector result in the generation of close previous polygon. the raster ort structure n vector list 22 ×2 **aEnd**

| | Dec 3 17:05 1985 graphics.doc Page 14 |
|----------------------------|--|
| graphics . library/AskFont | graphics.llbrary/AskSoftStyle |
| font | NAME AskSoftStyle - get the soft style bits of the current font |
| | SYNOPSIS enable = AskSoftStyle(rastPort), graphicsLib Al A6 |
| with the | FUNCTION This function returns those style bits of the current font that are not intrinsic in the font itself, but algorithmically generated. These are the bits that are valid to set in the enable mask for SetSoftStyle |
| wites are | INPUTS rastPort - the RastPort from which the font and style are extracted. |
| | RESULTS enable - those bits in the style algorithmically generated. Style bits that are not defined are also set. |
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INPUTS
rastPort - the RastPort from which the text attributes are
extracted.
textAttr - the TextAttr structure to be filled.

FUNCTION
This function fills the text attributes structure with the attributes of the current font in the rastPort.

NAME
AskFont - get the text attributes of the current font

graphics.library/Askfont

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SYNOPSIS Asidfont (rastPort, textAttr), graphicsLib Al A0 A6

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graphics.library/BitBitMap

graphics.library/BltBitMap

BitBitMap -- move a rectangle in a raster

A0 D0 D1 A1 DestX, DestY, SizeX, SizeY, Minterm, Mask, TempA); D2 D3 D4 D5 D6 D7 A2 planes = BitBitMap(SrcBitMap, SrcX, SrcY, DestBitMap, Do Ao Ao Do D1 Al Al

perform non-destructive blits to move a rectangle from one

area in a raster to another area, which can be on a different raster.

SrcBitMap, DestBitMap - the BitMap(s) containing the rectangles

 the planes copied from the source to the destination are only those whose plane numbers are identical and less than the minimum plane count and whose write mask is

SrcX, SrcY - the x and y coordinates of the upper left corner of the source rectangle. Valid range is positive signed integer such that the raster word's offset SrcBitMap and DestBitMap can be identical

DestX, DestY - the x and y coordinates of the upper left 0.. (32767-Size)

corner of the destination for the rectangle. Valid range is as for Src.
SizeX, SizeY - the size of the rectangle to be moved. Valid range is (X: 1..976; Y: 1..1023 such that final raster word's offset is 0..32767)

Minterm - the logic function to apply to the rectangle when A is non-zero (i.e. within the rectangle). B is the source rectangle and C, D is the destination for the rectangle.

- \$000 is a vanilla copy - \$030 inverts the source before the copy - \$050 ignores the source and inverts the destination - see the hardware reference manual for other combinations Mask - the write mask to apply to this operation. Bits set indicate the corresponding planes (if not greater than

the minimum plane count) are to participate in the operation. Typically this is set to 0xff.

TempA - If the copy overlaps exactly to the left or right (1.0. the scan line addresses overlap), and TempA is non-zero, it points to enough chip accessable memory to hold a line of A source for the blit.

RESULTS

planes - the number of planes actually involved in the blit.

EXCEPTIONS

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This bit is assumed to be friendly: no errors conditions (e.g. a rectangle outside the BitMap bounds) are tested or reported. A plane count that is less than expected can be attributed to a failure to allocate a TempA when it was needed and mull

graphics.library/BltPattern al points to RastPort
a0 points to 2 dimensional mask if needed
x1,y1 upper left of rectangular region in RastPort
maxx.maxy points to lower right of rectangular region in RastPort
bytecnt number of BytesPerRow for char * a0 Blit using drawmode, areafill pattern, outline, mask pointed to by a0, at position rectangle $\{x1,y1\}$ (maxx, maxy). The image is not shifted but must be word aligned. bytecnt) Using standard drawing rules for areafill, blit through a mask maxy, 1 maxx, d2 ヹ゙゙゙ぉ BltPattern(RastPort *, char *, x1, a1, a1) Dec 3 17:05 1985 graphics.doc Page 18 graphics.llbrary/BltPattern BltPattern --SYNOPSIS FUNCTION SEE ALSO RETURNS INPUTS 3 graphics.library/BitClear For memory that is local and blitter accessable. The most efficient way to clear a range of memory locations is to use the system's most efficient data mover, the blitter. This command accepts the starting location and count and clears that block to zeros. manBlock must be even set bit 0 to force function to wait until blit low 16 bits is taken as number of bytes per row and upper 16 bits taken as bytesperrow must be <=128 In standard bytecount mode multiple runs of the blitter may be used to clear all the memory. This function is somewhat hardware dependant. In the rows/bytesperrow mode, rows must be <=1024 and pointer to local memory to be cleared Bitclear - Clear a block of memory words to zero. set bit1 to use row/bytesperrow if (flags & 2) == 0 then even number of bytes to clear. BitClear (memBlock, bytecount, flags)
al d0 d1 The block of memory is set to zeros. Dec 3 17:05 1985 graphics.doc Page 17 number of rows. is done. graphics.library/BltClear else

memBlock flags

INPUTS

SYNOPSIS

MAR

FUNCTION

bytecount

None known,

800

RESULT

SEE ALSO

| Dec 3 17:05 1985 graphics.doc Page 20 | |
|--|-----------------------|
| graphics.library/CEND | graphics.library/CEND |
| NAME CEND terminate user copper list. | |
| SYNOPSIS CEND(c) | |
| FUNCTION add instruction to termainate user copper list. | |
| INPUTS c = pointer to UCopList structure | |
| TESULIS this is actually a macro that calls CMait(c) to walt for the end of the user copper list and then calls CBump(c) to bump the local pointer to the next instruction. BUCS | |
| MOIN STON | |
| CINIT(); CMONE(); CMOLIT(); | |
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| | |

INPUTS BUCS NAME graphics.library/ChangeSprite posct1[2]; /* used by simple sprite machine*/
data[height][2]; /* actual sprite image */
reserved[2]; /* initialized to */
/* 0xFFFF, 0xFFTF */ programmer must initialize reserved[2]. spriteinage must be in CHIP memory. the height subfield of the SimpleSprite structure must be set to reflect the height of the new spriteinage REFCRE calling ChangeSprite. The programmer may allocate two sprites to handle a single attached sprite. After CetSprite, ChangeSprite, the programmer can set the SPRITE_ATMACHED bit in poscil[1] of the odd numbered sprite. FUNCTION
The sprite image is changed to use the data starting at newdata = pointer to ViewPort structure that this sprite is or 0 if relative only top of View

s = pointer to SimpleSprite structure
newdata = pointer to data structure of the following form. ChangeSprite -- change the sprite image pointer. sprite.h FreeSprite ChangeSprite MoveSprite graphics.doc Page 21 struct spriteimage ChangeSprite (vp. s. newdata) a0 a1 a2 relative to. UMORD UMORD graphics.library/ChangeSprite Dec 3 17:05 1985 g. SYNOPSIS SEE ALSO RESULTS **B**CS - A-105 -

```
Dec 3 17:05 1985 graphics.doc Page 22

graphics.library/CINIT

WWE

CINIT -- initialize user copportist to accept intermediate

user copportist *CINIT(c,n)

FUNCTION

THEUTS

= pointer to Ucopiats structure

n = number of instructions buffor must hold

RESULTS

RESULTS

HE is actually a macro that calls Ucopportistinit(c,n)

to fold n copportise the list to accept copportise instructions

and ignore n.

BUGS
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| Dec 3 | 3 17:05 1985 graphi | graphics.doc Page 24 | |
|----------|--|---|------------------------------|
| graphic | graphics.library/ClearRegion | ılon | graphics.library/ClearRegion |
| NAME | ClearRegion set | ClearRegion set this region to size 0 | |
| SYNOPSI | SYNOPSIS ClearRegion (region) a0 | | |
| Function | n Clip away all recta | Function Clip away all rectangles in the region leaving nothing. | ng nothing. |
| INPUTS | region = p | = pointer to Region structure | • |
| BUCS | | | |
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Clear a rectangular swath from the current position to the right edge of the rastPort. The height of the swath is taken from that of the current text font, and the vertical positioning of the swath is adjusted by the text baseline, such that text output at this position would lie wholly on this newly cleared area.

Clearing consists of setting the color of the swath to zero, or, if the DrawMode is 2, to the BgPen.

graphics.library/ClearEOL

ClearEOL - clear from current position to end of line

SYNOPSIS ClearECL (rastPort), graphicsLib Al A6

FUNCTION

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graphics.library/ClearEOL

| Closefont - release a pointer to a system font. SYNOPSIS Closefont(font), Graphicalib Al A6 RUNCHION This function indicates that the font specified is no longer in use. It is used to close a font operad by OpenFont, so that fonts that are no longer in use do not consume system resources. IMPUTS font - A font, as returned by OpenFont. | graphics.library/CloseFont |
|---|---|
| CloseFont (font), GraphicsLib Al A6 This function indicates that the font specified is no longer in use. It is used to close a font opened by OpenFont, so in use. It is used to close a font opened by OpenFont, so in use are no longer in use do not consume system resources. IMPUTS font - A font, as returned by OpenFont. | NAME Closefont - release a pointer to a system font. |
| FUNCTION This function indicates that the font specified is no longer in use. It is used to close a font operad by OperFont, so that fonts that are no longer in use do not consume system resources. IMPUTS font - A font, as returned by OpenFont. | SYNOPSIS CloseFort(font), GraphicsLib Al A6 |
| font - A font, as returned by OpenEont. | FUNCTION This function indicates that the font specified is no longer in use. It is used to close a font opened by OpenFont, so that fonts that are no longer in use do not consume system resources. |
| | INPUTS font - A font, as returned by OpenFont. |
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| | |

graphics.library/ClearScreen

ClearScreen - clear from current position to end of RastPort

SYNOPSIS ClearScreen(rastPort), graphicsLib Al A6

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graphics.library/ClearScreen

Clear a rectangular swath from the current position to the right edge of the rastPort with ClearECL, then clear the rest of the screen from just beneath the swath to the bottom of the rastPort.

Clearing consists of setting the color of the swath to zero, or, if the DrawMode is 2, to the BgPen.

| 3 17:05 1985 graphics.doc Page 27 | Dec 3 17:05 1985 graphics.doc Page 28 |
|---|--|
| ics.library/ONOWE | graphics.library/CopySBitMap |
| OMOVE append copper move instruction to user copper list. | NAME CopySBitMap Syncronize Layer window with contents of Super BitMap |
| CMOVE(c, a, v) ION add instruction to move value v to hardware register a. | SYNOPSIS CopySBitMap(layer *) |
| c = pointer to UCopList structure a = hardware register v = 16 bit value to be written | FUNCTION This is the inverse of SyncSBitMap Copy all bits from SuperBitMap to Layer bounds. This is used for those functions that do not want to deal with the ClipRect structures but do want |
| this is actually a macro that calls CMove(c, &a,v) and then calls CBump(c) to bump the local pointer to the next instruction. | to be able to work with a SuperBitMap Layer. INPUTS layer * is a pointer to a Layer that has a SuperBitMap |
| | The Layer should already be locked by the caller. |
| | SyncSB1 tMap |
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BUCS

RESULTS

SINOPSIS CHOVE(c,a,v)

FUNCTION

INPUTS

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graphics.library/CMCWE

KAME

| 3 17:05 1985 graphics.doc Page 30 | graphics.library/DisownBlitter graphics.library/DisownBlitter NAWE DisownBlitter - return blitter to free state. | SYNOPSIS DisownBlitter() | FUNCTION Free blitter up for use by other blitter users. | | n | SO . OwnBlitter | |
|-----------------------------------|--|--------------------------|--|--------|---------|---------------------|--|
| Dec 3 17:0 | graphics.11 NAME Diso | SYNOPSIS | FUNCTION Fre | INPUTS | RETURNS | SEE ALSO OwnBlitter | |

| prophica.ilbrary/DisposeRegion graphica.ilbrary/Docollision tests every gal in gal list for collisions SNRESIS DOCOLLISION tests every gal in gal list for collisions SNRESIS DOCOLLISION REPORT TOWATION T | | |
|--|--------------------------------|---|
| NAME Decollation tests every gal in gal list for STANPESIS Decollation Report) STANPESIS Decollation Report) Tests each gal in gal list for boundary and gal- on detecting one of these collators, the approprentiation routine is called. This routine expects to find the gal list correct the system routine SortdList performs this for Northing BLCS Doesn't handle gal-to-gal collisions completely of SortdList SORTGLIST SORTGLIST | | 3 17:05 1985 |
| gion to free SYR RES RES SER | graphics.llbrary/DisposeRegion | graphics.library/DoCollision graphics.library/DoCollision |
| EUR SER BUCK SER | is region to free | Collision |
| E SEE SEE | | SYNOPSIS DoCollision(RPort) |
| ES BUC | | FUNCTION Tests each gel in gel list for boundary and gel-to-gel collisions On detecting one of these collisions, the appropriate collision-handling routine is called. See the documentation for a thorough description of |
| RES SEE | ture | which collision routine is called. This routine expects to find the gel list correctly sorted in Y.X order. The system routine SortGlist performs this function for the user |
| Nothing BUCS Doesn't handle gel-to-gel collisions completely correctly SEE ALSO SortGlist | | INPUTS RPort = pointer to a struct RastPort |
| DUCS Doesn't handle gel-to-gel collisions completely correctly SEE ALSO SortGList | | RESULT Nothing |
| SortGlist | | esn't handle gel-to-gel collisions completely correctly |
| | | List |
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| | | |

DisposeRegion -- return all space for this region to free memory pool

SYNOPSIS DisposeRegion (region) a0

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graphics.library/DisposeRegion

| | Dec 3 17:05 1985 graphics.doc Page 34 |
|-----------------------|--|
| graphics.library/Draw | graphics.library/DrawGist graphics.library/DrawGist |
| uo | NAME DrawGList process the gel list, queueing VSprites, drawing Bobs |
| | SYNOPSIS DrawGList(RPort, VPort) as called by C |
| | FUNCTION Performs one pass of the current gel list - if nextLine and lastColor are defined, these are initialized - for each gel - if it's a VSprite build it into the copper list - if it's a Bob, draw it into the current raster - copy the save values into the "old" variables, double-buffering if required |
| | INPUTS al = pointer to the RastPort where Bobs will be drawn a5 = pointer to GfxBase |
| | RESULT Nothing |
| | BUCS MUSITARAW isn't implemented yet. Probably won't be for this release either. We are sad. |
| | SEE ALSO Nothing |
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Draw -- draw a line between the current pen position and the new κ,γ position

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graphics.library/Draw

NAME

FUNCTION Draw a line from the current pen position to (x,y).

SYNOPSIS
Draw (rp, x, y)
Al D0 D1

pointer to a RastPort point in the RastPort to end the line.

ς, γ

INPUTS

| Dec 3 17:05 1985 graphics.doc Page 35 | Dec 3 17:05 1985 graphics.doc Page 36 | |
|---|---|---------------|
| | | |
| graphics.library/Flood | graphics.library/FreeColorMap graphics.library/FreeColorMap | /FreeColorMap |
| NAME Flood flood rastport like areafill | NAME FreeColorMap free the ColorMap structure and return memory to free memory bool | <u></u> |
| SYNOPSIS Flood (rp, mode, x, y) al d2 d0 d1 | SYNOPSIS FreeColorMap (colormap) | |
| FUNCTION Search the BitMap starting at (x,y). Fill all adjacent pixels if they are: a: arenot the same as AOLPen Mode 0 a: same as the one at (x,y) Mode 1 | INPUTS colormap pointer to ColorWap allocated with GetColorWap RESULI | |
| When actually doing the fill use the modes that apply to standard areafill routine such as drawmodes and patterns. | The space is made available for others to use. BUCS | |
| INPUTS Tp pointer to RastPort (x,y) coordinate in BitMap mode 0 fill all adjacent pixels searching for border 1 fill all adjacent pixels that have same pen number as (x,y) | SEE ALSO SetRCB4 CetColorMap | |
| SEE ALSO | • | - |
| BUCS | | |
| None known | | |
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| 3 17:05 1985 graphics.doc Page 38 | graphics.library/FresCprList NAME FresCprList deallocate hardware compar list | SYNOPSIS FreeQrist (qrlist) | M return cprlist to free memory pool | rlist pointer to cprlist structure | | none known | | | |
|-----------------------------------|---|--------------------------------|---|------------------------------------|---------|---------------|----------|---|---|
| Dec 3 17:05 1 | graphics.libra | SYNOPSIS FreeQpr | FUNCTION | INPUTS opr11st | RESULTS | BUCS none lan | SEE ALSO | · | • |

| pec 3 17:05 1985 graphics.doc Page 37 graphica.library/FreeCopilat NAME FreeCopilat - deallocate intermediate copper list FreeCopilat (copilat) FreeCopilat (copilat) FreeCopilat pointer to structure Copilat NEUTS COPILAT POINTER POINTER TO STRUCTURE COPILAT RESULTS R | ERICS SEE ALSO |
|--|----------------|
|--|----------------|

Always use the same values that were used with AllocRaster To return to the free memory pool the memory space which had been allocated by a call to AllocRast. Dec 3 17:05 1985 graphics.doc Page 40 height vidth NOTE: FUNCTION INPUTS graphics.library/FreeCBuffers For each sequence of each component of the AnimOb, deallocate memory for: a1 = pointer to the AnimOb structure
a2 = pointer to the current RastPort
d0 = double-buffer indicator (set TRUE for double-buffering) SaveBuffer
BorderLine
CollMask and ImageShadow (point to same buffer)
if db is set (user wants double-buffering) deallocate: deallocate memory gotten by GetGBufers as called by C graphics.doc Page 39 FreeCBuffers(anOb, RPort, db) graphics.library/FreeCBuffers DBuffPacket. **BufBuffer** Dec 3 17:05 1985 **EresCBuffers** None known Nothing SYNOPSIS FUNCTION SEE ALSO RESULT INPUTS BUCS

graphics.library/FreeRaster Freekaster -- release an allocated area to the system free memory pool. the same values of width and height with which you called AllocRaster in the first place, when the pointer p returned. This defines the size of the memory space which is to be returned to the free p = a pointer to a memory space returned as result of a call to AllocRaster. the width in bits of the bitplane. SYNOPSIS FreeMaster (p, width, height) graphics.library/FreeRaster memory pool.

graphics.doc Page 42 Dec 3 17:05 1985 none known FUNCTION SEE ALSO RESULTS INPUTS BUCS graphics.library/FreeSprite These sprite routines are provided to ease sharing of sprite hardware and to handle simple cases of sprite usage and movement. It is assumed the programs that use these routines do want to be good citizens in their hearts. is: they will not FreeSprite unless they actually own the sprite. Virtual Sprite machine may ignore simple sprite machine. sprite made available for subsequent callers of GetSprite as well as use by Virtual Sprite Machine FreeSprite -- return sprite for use by others and virtual sprite machine mark sprite as available for others to use. sprite.h GetSprite ChangeSprite MoveSprite graphics.doc Page 41 graphics.library/FreeSprite FreeSprite (pick) **2** 0-7 Dec 3 17:05 1985 pick FUNCTION SEE ALSO RESULTS BUCS

graphics.library/FreeVPortCopLists FreeVPortCopLists -- deallocate all intermediate copper lists and their headers from a viewport vp->Dspins == NULL; vp->Sprins == NULL; vp->Clrins == NULL; vp->UCopins == NULL; recursively search display, color, sprite, and user copper lists and call FreeMem() to deallocate them from memory viewport pointer to ViewPort structure graphics.library/FreeVPortCopLists SYNOPSIS FreeVPortCopLists (viewport)

| Dec 3 17:05 1985 graphics.doc Page 44 |
|---|
| graphics.library/GetGBuffers |
| NAME CetCBuffers attempts to allocate ALL the buffers of an entire AnimOb |
| SYNOPSIS CetGBuffers(anOb, RPort, db) as called by C a0 a1 d0 |
| FUNCTION For each sequence of each component of the AnimOb, allocate memory for: SaveBuffer SaveBuffer CollMask and ImageShadow (point to same buffer) If db is set (user wants double-buffering) allocate: BufBacket BufBuffer |
| INPUTS al = pointer to the AnimCb structure a2 = pointer to the current RastPort d0 = double-buffer indicator (set TRUE for double-buffering) |
| RESULT TRUE if the memory allocations were all successful, else FALSE |
| BUCS None known |
| SEE ALSO Nothing |
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| Dec 3 17:05 1985 graphics.doc Page 45 | Dec 3 17:05 1985 graphics.doc Page 46 |
|---|--|
| graphics.library/GetRCB4 | graphics.library/GetSprite |
| NAME GetRGB4 inquire value of entry in ColorMap | NAME CatSprite attempt to get a sprite for the simple sprite manager. |
| SYNOPSIS GetRGB4(colormap, entry) a0 d0 | SYNOPSIS Sprite_Number = GetSprite(sprite, pick) d0 d0 |
| INPUTS colormap pointer to ColorMap structure entry index into colormap | FUNCTION attempt to allocate one of the eight sprites for private use with the simple sprite manager. This must be done before using further calls to simple sprite machine. |
| returns -1 if no valid entry return UMCRD RCB value 4 bits per gun right justified BUCS | INPUTS sprite = ptr to programmers SimpleSprite structure. pick = 0-7 pick = 0-7 -1 if programmer just wants the next one. |
| SET ALSO SetRCB4 LoadRCB4 GetColorMap FreeColorMap | RESULTS If pick is 0-7 attempt to allocate the sprite. If the sprite is already allocated then return -1 If pick -1 allocate the next sprite. If no sprites are available return -1. If the sprite is available for allocation, mark it allocated and fill in the 'num' entry of the SimpleSprite structure. If successful return the sprite number. |
| | BUCS |
| | SEE ALSO sprite.h FreeSprite ChangeSprite MoveSprite GetSprite |
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graphics.library/CetSprite

graphics.library/InitArea such that it has a size of (max vectors). The size of the region pointed to by buffer (short pointer) should be five (5) times as large as (max vectors). This size is in bytes. Areafills done by using AreaFove, AreaDraw and AreaEnd must have enough space allocated in this table to store all the points of the largest fill. If not enough space the routines will return -1 This function provides initialization for the vector collection matrix AreaInfo = pointer to AreaInfo structure
buffer = pointer to chunk of memory to collect vertices
max vectors = max number of vectors this buffer can hold The underlying graphics routines actually split the table into two parts to save coordinates and flags Pointers are set up to begin storage of vectors done by AreaMove and AreaDraw. InitArea - Initialize vector collection matrix InitArea (AreaInfo *, buffer *, max vectors) 융 graphics.doc Page 47 graph.h AreaEnd AreaMove AreaDraw graphics.library/InitArea Dec 3 17:05 1985 None known SYNOPSIS FUNCTION SEE ALSO INPUTS RESULT K NOTE **8000**

graphics.library/InitBitMap Initialize various elements in the BitMap structure to correctly reflect input depth, width, and height. Must be used before use of BitMap in other graphics calls. The Planss[8] are not initialized and need to be set up by the caller. The Planes table was put at the end of the structure so that it may be truncated if needed, as well as InitBitMap - Initialize bit map structure with imput values pointer to a BitMap structure (gfx.h) number of bitplanes that this bitmap will have number of bits (columns) wide for this BitMap number of bits (rows) tall for this BitMap InitBitMap(bm, depth, width, height)
a0 d0 d1 d2 graphics.doc Page 48 graphics.library/InitBitMap 3 17:05 1985 extended. ba depth vidth beight None known The gfx.h FUNCTION SYNOPSIS SEE ALSO INPUTS **2** MAR BUSS

| InitCMasks initialize all the masks of an AnimOb SYNCPSIS InitCMasks (anCb) as called by C a0 FUNCTION For every sequence of every component call InitMasks INPUTS al = pointer to the AnimOb BUCS Nore known SEE ALSO Nothing Nothing Nothing | |
|--|---|
| InitCMasks (anOb) as called by C a0 a0 EUNCTION For every sequence of every component call InitMasks a1 = pointer to the AnimOb BESULT Nothing SUCS Nothing Nothing Nothing | |
| For every sequence of every component call Inithasks INPUTS al = pointer to the AnimOb RESULT Nothing SUCS None known SEE ALSO Nothing | |
| INPUTS a1 = pointer to the AnimOb RESULT Nothing NONe known NEE ALSO Nothing | FUNCTION For every sequence of every component call InitMasks |
| Nothing SUCS None known Nothing Nothing | INPUTS a1 = pointer to the AnimOb |
| Ę | RESULT Nothing |
| · | BUCS None known |
| | SEE ALSO Nothing |
| | |
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graphics.library/InitGels

NAME InitGels -- initialize a gel list; must be called Before using gels

SYNCPSIS InitGels (head, tail, Ginfo) a0 a1 a2

FUNCTION

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graphics.library/InitGels

Assigns the VSprites as the head and tail of the gel list in GfxBase Links these two gels together as the keystones of the list If the collHandler vector points to some memory array, sets the BORDERHIT vector to NULL

graphics.library/InitRastPort Initialize a RastPort structure to standard values The struct Rastport describes a control structure for a write-able raster. The RastPort structure describes how a complete single playfield display will be written into. A RastPort structure is referenced whenever any drawing or filling establish where, in memory, the rasters are located. To do graphics with this RastPort the user must set up the BitMap pointer in the RastPort. The section of memory which is being used in this way may or may not be presently a part of the current actual onscreen display memory. The name of the actual memory section which is linked to the RastPort is referred to here as a "raster" or operations are to be performed on a section of memory. routine InitRastPort only staults. It does NOT DrawMode = JAM2 The font is set to the standard system font InitRastPort - Initialize raster port structure all entries in RastPort get zeroed out. = pointer to a RastPort structure. The following get -1: Mask, EgPen, AOLPen, LinePtrn establishes various defaults. graphics.doc Page 52 Calling the graphics.library/InitRastPort 급 exceptions: InitRastPort (rp) as a bitmap. Dec 3 17:05 1985 ٩ SYNOPSIS FUNCTION INPUTS RESULT NAME BUGS graphics.library/InitMasks initializes the BorderLine and CollMask masks of a VSprite Creates the appropriate BorderLine and CollMask masks of the VSprite Correctly detects if the VSprite is actually a Bob definition, handles the image data accordingly VS = pointer to the VSprite structure Dec 3 17:05 1985 graphics.doc Page 51 as called by C graphics.library/InitMasks

Nothing

SEE ALSO

BUCS

Nothing

RESULT

InitMasks ---

InitMasks (VS)

FUNCTION

SYNOPSIS

| Graphics.library/InitTmpRas WANTE InitTmpRas Initialize area of local memory for usage by areafill, floodfill, text STNOPSIS InitTmpRas (upras *, buffer *, size) a0 al do EUNCTION The area of memory pointed to by buffer is set up to be used by RastPort routines that may need to get some memory for intermediate operations in preparation to putting the graphics into the final BitHup. Umpras is used to control the usage of buffer. INPUTS Umpras is used to control the usage of buffer. Empras pointer to a ImpRas structure to be linked into a RastPort pointer to a contguous piece of chip memory. RESULT makes buffer available for users of RastPort Mould be nice if RastPorts could share one ImpRas. |
|---|
| TI III III III III III III III III III |
| Init Init Init Init Init Init Init Init |
| |
| traprass buffer size size makes buffer none known, Would be nic |
| buffer size LT makes buffer none known, Would be nio |
| 5 |
| |
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None known.

The rastport.h

SEE ALSO

| WAME InitVPort - Initialize ViewPort structure SYNOPSIS InitVPort - Initialize ViewPort structure SONOPSIS InitVPort (vp) InitVPort (vp) Initialize ViewPort structure to default values. INPUTS Vp = pointer to a ViewPort structure RESULT ViewPort structure set to all 0's. BUCS None known. SEE ALSO view.h | Dec 3 17:05 1985 graphics.doc Page 56 | |
|--|---|----------------------------|
| it is silve | graphics.library/InitVPort | graphics.library/InitVPort |
| TI IS SI IS | NAME | |
| SI SI FI ON I SI FI ON | InitVPort - Initialize ViewPort structure | |
| TION II. ST FI. | SYNOPSIS | |
| TION IT | InitVPort(vp) a0 | |
| T. I. I.S.O | FUNCTION | |
| T. ViewPort LSO ew.h | Initialize ViewPort structure to default va | . nes |
| yp ViewPort LSO ew.h | INPUTS | |
| L LSO | | |
| eg CSC | RESULT | |
| None known. SEE ALSO view.h | ViewPort structure set to all 0's. | |
| None known. SEE ALSO view.h | BUCS | |
| view.h | None known. | |
| view.h | SEE ALSO | |
| | view.h | |
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graphics.library/LoadRGB4 colormap starting at color 0 (background) and proceeding to the next higher color number 0 = minimum intensity. The colors are interpreted as 15 = maximum intensity. store the colors in the ViewPorts colormap. This is a table of gotten from GetColorMap (number of entries). This colormap will be initialized from the Default colormap. = number of UNCRDs in the table to load into the load the count words of the colormapper from table LoadRGB4 -- load RGB color values from table UMORD per value. 0x0RGB 0×0RGB Dec 3 17:05 1985 graphics.doc Page 57 background -- 0x0RGB count) LoadRGB4 (vp. colormap, color1 color2 graphics.library/LoadRCB4 None known view.h count SYNOPSIS FUNCTION SEE ALSO RESULTS INPUTS NAME BUCS - A-123 -

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graphics.library/LoadView

Wave

LoadView -- Use a (possibly freshly created) coprocessor instruction
list to create the current display.

STNUTENIS

LoadView (View)

FUNCTION

See NAVE field. Coprocessor instruction list has been created by
InitVPort, Maleview, and MrgCop.

INPUTS

View - a pointer to the View structure which contains the
pointer to the constructed coprocessor instructions list.

RESULT

The new View is displayed, according to your instructions.

The vertical blank routine will pick this pointer up and
direct copper to start displaying this View.

SEE ALSO

InitVPort, MalevView, MrgCop
InitUthor, MalevView, MrgCop
InitUthor, Sethinfolisplay()

| Dec 3 17:05 1985 graphics.doc Page 60 | graphics.library/MakeWPort | NAME MakeVPort generate display cop | SYNOPSIS MakeVPort(view, viewport) a0 a1 | FUNCTION Using information in the View, Viconstruct intermediate copper lis | <pre>INPUTS view = pointer to View structu viewport= pointer to ViewFort structu The viewFort must have</pre> | RESULTS constructs intermediate copper living viewport. Depins If the ColorMap ptr in ViewPort is from the default color table. If DUALPF in Modes then there must by the first RasInfo BUCS | SEE ALSO MrgCop() view.h Intuition's MakeScreen(), RemakeD | |
|---------------------------------------|-------------------------------|--|--|--|---|--|--|--|
| Dec 3 17:05 1985 graphics.doc Page 59 | graphics.library/LockLayerRom | NAME LockLayerRom Lock Layer structure by rom(gfx 11b) code | SYNOPSIS LockdayurRom(layer) a5 | FUNCTION Return when the layer is locked and no other may alter the ClipRect structure in the Layer structure. | 23 | NOTE This call does not destroy any registers. This call nests so that callers in this chain will not lock themselves out. Caveat: This lock does not prevent another task from calling LockiayerRom() and not blocking. This is potentially dangerous in the case of ScrollRaster which will resort the list of ClipRects although it does not add any new ClipRects or remove any ClipRects. | SEE ALSO Layers .h | |

graphics.library/MakeWert eScreen(), RemakeDisplay(), and RethinkDisplay() ptr in ViewPort is nil then it uses colors t color table. des then there must be a second RasInfo pointed RasInfo rmediate copper list and puts pointers in on in the View, ViewPort mediate copper list for this ViewPort. er to View structure er to ViewPort structure /lewport must have valid ptr to RasInfo merate display copper list , viewport) al år

| NOWE Worsprite Nowe sprite to a point relative to top of visaport STMCESIS Worssprite ("Pp. sprite, "X, Y) Nowesprite ("Pp. sprite, "X, Y) Nowesprite image to new place on display. INFURS "Pp. = pointer to VisaPort structure = 0, If sprite positioned relative to Visa sprite = pointer to VisaPort structure = 0, If sprite positioned relative to Visa sprite = pointer to Supplagationed relative X, Y = new position relative to top of visaport RESULTS SHUES SPE ALSO SPE ALSO Sprite h FreeSprite ChangeSprite CetSprite | Dec 3 17:05 1985 graphics.doc Page 62 | |
|---|--|----------|
| Howegarite Howe sprite to a point relative to top of viewport SYNOPSIS Howegarite (up, sprite, x, y) Howegarite (up, sprite, x, y) HOWESTON Howe sprite image to new place on display. HOWESTON HOWESTON = pointer to Viewfort structure = 0, if sprite positioned relative to View sprite = pointer to SimpleSprite structure x,y = new position relative to top of viewport SESULIS BUGS SEE ALSO sprite.h FreeSprite ChangeSprite CetSprite | | |
| oveSprii | | |
| Move spr ry r,y rite.h | oveSprite(vp, a0 | |
| wp. rite.h | FUNCTION Move sprite image to new place on display. | |
| BUCS SEE ALSO sprite.h FreeSprite ChangeSprite CetSprite | vp sprite x,y | |
| SEE ALSO sprite.h FreeSprite ChangeSprite CetSprite | RESULTS | |
| sprite.h FreeSprite ChangeSprite CetSprite | BUCS | |
| | SEE ALSO sprite.h FreeSprite ChangeSprite CetSprite | |
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Ope 3 17:05 1965 graphics. doc Page 64

WANTE

WANTE

WANTE

Fig. = (struct Region *) Membegion ()

Function

Create a Region structure, initialize it to empty and return a pointer it.

INFURS

BUCS

| Dec 3 17:05 1985 graphics.doc Page 66 |
|--|
| graphics.library/OrRectRegion graphics.library/OrRectRegion |
| NAME OrRectRegion Perform 2d OR operation of rectangle with region, leaving result in region |
| SYNOPSIS OrRectRegion (region, rectangle) a0 al |
| Function If any portion of rectangle is not in the region them add that portion to the region |
| INPUTS region = pointer to Region structure rectangle = pointer to Rectangle structure |
| BUCS |
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EXCEPTIONS

DO is zero if the desired font cannot be found. If the named font is found, but the size and style specified are not available, a font with the nearest attributes is returned.

textAttr - a TextAttr structure that describes the text font

attributes desired

FUNCTION
This function searches the system font space for the graphics text font that best matches the attributes specified. The pointer to the font returned can be used in subsequent Seffont and CloseFont calls. It is important to match this call with a corresponding CloseFont call for effective management of ram fonts.

graphics.library/OpenFont

OpenFont - get a pointer to a system font.

graphics.library/OpenFont

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SYNOPSIS
font = OpenFont(textAttr), graphicsLib
D0 A0 A6

| Dec 3 17:05 1985 graphics.doc Page 68 |
|--|
| graphics.library/Polybraw graphics.library/Polybraw |
| NAME Polybraw Draw lines from table of (x,y) values. |
| SYNOPSIS PolyDraw(rp, count , array) al d0 al |
| FUNCTION starting with the first pair draw connected lines to it and every succeeding pair. |
| INPUTS rp = pointer to RastPort structure count = number of points in array (x,y) pairs array = pointer to first (x,y) pair |
| BUCS none known |
| SEE ALSO Draw() |
| |

3 17:05 1985 graphics.doc Page 70 Бес NAME graphics.library/QBlit current blitter queue. The pointer bp points to a blit structure See the description of the blit structure and the uses of QBlit in the section titled Graphics Support in the OS Kernel Manual. The header of a blitter structure is shown in hardware/blit.h This means that you can routing is called, you are in control of the blitter ... it is containing, among other things, the link information, and the address of your routine which is to be called when the blitter quaue finally gets around to this specific request. When your directly specify the register contents and start the blitter. In general requests for blitter usage through this channel are put in front of those who use the biltter via OwnBlitter and DiscomBlitter. However for small blits there is more overhead using the queuer than Own/Discown Blitter. Link a request for the use of the blitter to the end of the Your routine is called when the blitter is ready for you. QBlit -- Queue up a request for blitter usage not busy with anyons else's requests. graphics.doc Page 69 bp = pointer to a blit structure graphics.library/QBlit Dec 3 17:05 1985 QBSBlit blit.h QBlit(bp) None known SYNOPSIS FUNCTION SEE ALSO SINGNI RESULT

graphics.library/QBSBlit the QBlit queue. Calls the user routine contained in the blit structure when the video beam is located at a specified position onscreen. Useful when you are trying to blit into a visible part of the screen and wish to perform the data move while the beam is not trying to display that same area. (prevents showning part of an old display aimiltaneously). Blitter requests on the QRSBlit queue take precedence over those on the regular blitter queue. The beamposition is specified the blitnode. or use of the blitter, enqueued separately from Calls the user routine contained in the blit QBSBlit -- Synchronize the blitter request with the video beam bsp = pointer to a blit structure. See description in the Graphics Support section of the manual for more info. User routine is called when the QBSBlit queue reaches this request AND the video beam is in the specified position. Call a user routine for graphics.library/QBSBlit QBSBlit(bsp) SYNOPSIS FUNCTION QBlit SEE ALSO INPUTS RESULT

| Dec 3 17:05 1985 graphics.doc Page 71 | Dec 3 17:05 1985 graphics.doc Page 72 |
|--|--|
| graphics.library/ReadPixel | graphics.library/RectFill Graphics.library/RectFill |
| he pen number value of the j led x,y location within a o | defined rectangular area wit t drawing pen color, outline |
| SYNOPSIS permo = (int)ReadPixel(rp, x, y) D0 al D0 D1 | secondary color, and pattern. SYNOPSIS |
| FUNCTION Combine the bits from each of the bit-planes used to describe a particular RastPort into the pen number selector which that bit combination normally forms for the system hardware selection of pixel color. | Kectfill (TP, Xm.H., Ymax, Ymax) Al D0 D1 D2 D3 FUNCTION Fill the rectangular region specified by the parameters with the chosen pen colors, areafill pattern, and drawing mode. |
| INPUIS x is the X coordinate within the range of the RastPort size. y is the Y coordinate within the range of the RastPort size. rp is a pointer to a RastPort structure rp is a pointer to a RastPort structure | <pre>INPUTS (xmin,ymin) (xmax,ymax) are the coordinates of the upper left corner and the lower right corner, respectively, of the rectangle. (xmax >= xmin) and (ymax >= vmin)</pre> |
| Pen (0255) number at that position is returned1 is returned if cannot read that pixel | rp points to the RastPort which receives the filled rectangle. |
| BUCS :: | SEE ALSO |
| SEE ALSO WritePixel | |
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| Dec 3 17:05 1985 graphics.doc Page 74 |
|--|
| graphics.library/RemIBob |
| NAME RemiBob removes immediately a Bob from the gel list and the RastPort |
| SYNOPSIS RemIBob (Bob, RPort, VPort) a0 a1 a2 |
| FUNCTION Removes a Bob immediately by uncoupling it from the gel list and erasing it from the RastPort |
| INPUTS Bob = pointer to the Bob to be removed RPort = pointer to the RastPort if the Bob is to be erased VPort = pointer to the ViewPort for beam-synchronizing |
| RESULT Nothing |
| BUCS None known |
| SEE ALSO RemVSprite |
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graphics.library/Remeont

NAME Remfont - remove a font from the system list

graphics.library/RemFont

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SYNOPSIS error = RemFont(textFont), GraphicsLib D0 A1 A6

FUNCTION
This function removes a font from the system, ensuring that access to it is restricted to those applications that currently have an active pointer to it: i.e. no new GetFont requests to this font are satisfied.

INPUTS textFont structure to remove.

| oc Page 76 | |
|---|--|
| y quice.library/Scrolikaster graphics.library/Scrolikaster | |
| NAME ScrollRaster push bits in rectangle in raster around by dx, dy towards 0,0 inside rectangle | |
| ScrollRaster (rp, dx, dy, xmin, ymin, xmax, ymax) al d0 d1 d2 d3 d4 d5 | |
| FUNCTION move the bits in the raster by (dx,dy) towards (0,0) The space vacated is Rectfilled with BCPen. limit the scroll operation to the rectangle defined by (xmin,ymin) (xmax,ymax). Bits outside will not be affected. | |
| INPUTS rp must a valid pointer to a RastPort "rastport.h" dx,dy are integers that may be postive, zero, or negative | |
| EXAMPLE | |
| ScrollRaster(rp,0,1) /* shift raster up by one row */ ScrollRaster(rp,-1,-1) /* shift raster down and to the right by 1 pixel | |
| 8 | |
| | |

| graphics.library/SetAPen NAME SetAPen Set primary pen SYNOPSIS SetAPen (rp, pen) al do EUNCTION Set the primary drawing pen for lines, fills, and text. INPUTS rp = pointer to RastPort structure. pen = 0-255 RESULT Changes the minterms in the RastPort to reflect new primary pen. Set line drawer to restart pattern. BUCS SET ALSO SETE ALSO SETEROR | 28 | imary pen) frawing pen for lines, fills, a r to RastPort structure. rms in the RastPort to reflect or restart pattern. | graphics.library/SetAPen und text. |
|--|-------------------|--|------------------------------------|
| 22 8 8 | | Wen Set primary pen Wen(rp, pen) al d0 al d0 = pointer to RastPort structure. = 0-255 = 0-255 line drawer to restart pattern. Pen | und text. : new primary pen. |
| 81 82 F1 82 S2 | | Wen(rp, pen) al d0 al d0 the primary drawing pen for lines, fills, an = pointer to RastPort structure. = 0-255 ine drawer to restart pattern. Pen | und text. |
| II IS | S E | the primary drawing pen for lines, fills, an = pointer to RastPort structure. = 0-255 nges the minterms in the RastPort to reflect line drawer to restart pattern. Pen | nd text.: |
| Z | 8 H | = pointer to RastPort structure. = 0-155 gmss the minterms in the RastPort to reflect line drawer to restart pattern. Pen | : new primary pen. |
| T. SOL | F | iges the minterms in the RastPort to reflect: line drawer to restart pattern. Yen | : new primary pen. |
| S. J. | BUCS CPP AT SO | Pen | |
| SEE ALSO SetEPen | CE AT SO | Pen | |
| | Set BE | | |
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| no plus contracted to the cont |
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| graphics.library/SetCollision graphics.library/SetCollision |
| NAME SetCollision sets a pointer to a user collision routine |
| SYNOPSIS SetCollision(num, routine, Ginfo) d0 a0 a1 |
| FUNCTION Sets entry h in the user's collision vectors table equal to the pointer p |
| INPUTS num = collision vector number routine = pointer to the user's collision routine Ginfo = pointer to a Gelsinfo structure |
| RESULT Nothing |
| BUCS None known |
| SEE ALSO Nothing |
| |
| |
| |
| |

graphics.library/SetDrMd /* jam 1 color into raster */
/* jam 2 colors into raster */
/* XOR bits into raster */
/* inverse video for drawing modes */ Set the drawing mode for lines, fills and text. The mode set is dependant on the bits selected. Change minterms to reflect new drawing mode. Set line drawer to restart pattern. may not make much sense. = pointer to RastPort structure. = 0-255 Dec 3 17:05 1985 graphics.doc Page 81 SetDrMd -- Set drawing mode SetDrMd(rp, mode) al d0 some combinations graphics.library/SetDrMd rp = po mode = 0-#define JAM1 #define JAM2 #define COMPLEMENT #define INVERSVID SetAPen SYNOPSIS SEE ALSO FUNCTION INPUTS RESULT NAME BUCS

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graphics.library/SetFont graphics.library/SetFont

NAME
SetFont -- set the text font and attributes in a RastPort

STNOPSIS
error = SetFont(rastPort, font), graphicsLib

DO Al AO A6

FUNCTION
This function sets the font in the RastPort to that described
by font, and updates the text attributes to reflect that
change. If TextAttr is zero, this call leaves the RastPort
with no font. This function clears the effect of any previous
soft styles.

INPUTS
RastPort - the RastPort in which the text attributes are
changed.
font - an open font.

.

| Graphics.library/SetECB4 NAME SetECB4 set on SetECB4 (vp. n, a0 D0 INPUTS vp= viewport to a n = the color numb r = red level g = green level g = green level b = blue level in the structure The selected color If the color value BUCS If the color value the next viewport. SEE ALSO LoadRCB4 |
|---|
|---|

| Dec 3 17:05 1965 graphics.doc Page 83 graphics.library/Sottast WANE SoftEast - Set an entire drawing area to a specified color. STONDESIS SoftEast (RastPort, pen) FUNCTION FOR THE PROPERTY (PROPERTY PROPERTY PROPERTY PARTY |
|--|
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Г

| SortGList sort the current gel list according to the y,x coordinates SYNOPSIS SortGList(RPort) as called by C EUNCTION Sorts the current gel list according to the gels' y,x coordinates This sorting is essential before calls to DrawGList or DoCollision INPUTS RPORT = pointer to the RastPort structure containing the CelsInfo RESULT Nothing BUCS None known SEE ALSO | DranGlist. |
|---|------------|
|---|------------|

RESULTS

style - the new font style to set, subject to enable.
enable - those bits in style to be changed. Any set bits here that would not be set as a result of AskSoftStyle will be ignored, and the newStyle result will not be as expected.

rastPort - the RastPort from which the font and style

are extracted.

INPUTS

style - the resulting style, both as a result of previous soft style selection, the effect of this function, and the style inherent in the set font.

This function alters the soft style of the current font. Only those bits that are also set in enable are affected. The resulting style is returned, since some style request changes will not be honored when the implicit style of the font precludes changing them.

newStyle = SetSoftStyle(rastPort, style, enable), graphicsLib
Al D0 D1 A6

SetSoftStyle - set the soft style of the current font

SYNOPSIS

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graphics.library/SetSoftStyle

graphics.library/SetSoftStyle

| Dec 3 17:05 1985 graphics.doc Page 88 | graphics.library/Text graphics.lil | write text characters (no formatting) | SYNOPSIS error = Text(RastPort, string, count), gfxLib D0 A1 A0 D0-0:16 A6 | FUNCTION This graphics function writes printable text characters to the specified RastPort at the current position. No control meaning is applied to any of the characters, and only text on the current line is output. | INPUTS RastPort - a pointer to the RastPort which describes where the text is to be output count - the string length. If zero, there are no characters to be output. string - the address of string to output | EXCEPTIONS BOUNDS - If the characters displayed run past the RastPort boundary, the current position is truncated to the boundary, and thus does not represent the true position. | |
|---------------------------------------|---|--|--|--|---|---|--|
| doc Page 87 | graphics.library/SyncSBitMap graphics.library/SyncSBitMap | NAME SyncSBitMap Syncronize Super BitMap with whatever is in the standard Layer bounds | SYNOPSIS SyncSBitMap(layer *) | FUNCTION Copy all bits from ClipRects in Layer into Super BitMap BitMap. This is used for those functions that do not want to deal with the ClipRect structures but do want | to be able to work with a SuperBitMap Layer. INPUTS layer * is a pointer to a Layer that has a SuperBitMap The Layer should already be locked by the caller. | SEE ALSO CopySBitMap | |

graphics.library/Text

- A-138 -

graphics.library/UnlockLayerRom UnlockLayerRom -- Unlock Layer structure by rom(gfx 11b) code Decrement Lock count and Unlock Layer if the result is 0. Once the Layer is really unlocked the layerlib may then There should be an UnlockLayer for every LockLayer. This call does destroy scratch registers. = pointer to Layer structure graphics.doc Page 90 graphics.library/UnlockLayerRom UnlockLayerRom(layer) layers.h LockLayer() modify this Layer. 3 17:05 1985 layer SEE ALSO FUNCTION INPUTS KOTE graphics.library/TextLangth RastPort - a pointer to the RastPort which describes where the length - the number of pixels in x this text would occupy, not including any negative kerning that may take place at the beginning of the text string, nor taking into account the effects of any clipping that may take This graphics function determines the length that text data would occupy if output to the specified RastPort with the current attributes. The length is specified as the number of raster dots: to determine what the current position would be after a Write using this string, add the length to $\phi_{\rm c} \times (\phi_{\rm c})$ is unchanged by Write). string - the address of string to determine the length of count - the string length. If zero, there are no characters

RESULTS

in the string

text attributes reside.

TextLength - determine raster length of text data

graphics.library/TextLangth

graphics.doc Page 89

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count)

length = TextLength(rastPort, string, Do Al Al D0-0:16

SYNOPSIS

A length that would overflow single word arithmatic is not

calculated correctly.

Dec 3 17:05 1985 graphics.doc Page 92 graphics.library/WeamPos Because of multitasking, the actual value returned may have interrogates hardware for beam position and returns value. Valid results in the range of 0-255 Because of hardware constraints if the vertical beam is between 256 and 262 then 0 through 6 may be returned. VBeamPos -- get vertical beam position at this instant get the vertical beam position from the hardware. Dec 3 17:05 1985 graphics.doc Page 91 graphics.library/WeamPos pos = VBeamPos() no use none SYNOPSIS FUNCTION INPUTS RESULT KAR BUCS MOTE

graphics.library/WaitBlit WaitBlit returns when the blitter is idle. This function should normally only be used when dealing with the blitter in a synchronous manner, such as when using OwnBlitter and DiscomBlitter. WaitBlit does not wait for all blits queued up using QBlit or QBSBlit. WaitBlit -- Wait for the blitter to be finished before proceeding with anything else. Because of a bug in agmus. This code may return too soon when the blitter has infact not started the blit yet, even though BltSize has been written. This most often occurs in a heavily loaded system with extended memory, HIRES, and 4 bitplanes. Your program waits until the blitter is finished. OwnBlitter, DisownBlitter graphics.library/WaitBlit SYNOPSIS WaitBlit() none FUNCTION SEE ALSO INPUTS RESULT 3 BUCS

| Dec 3 17:05 1985 graphics.doc Page 94 |
|--|
| graphics.library/MaitIOF |
| NAME WaitTOF Wait for the top of the next video frame |
| SYNOPSIS WaltTOF() |
| FUNCTION Walt for vertical blank to occur and all vertical blank service routines to complete before returning to caller. |
| , SONB |
| INPUTS none |
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| graphics.library/KorBectRegion |
|--|
| NAME XorRectRegion Perform 2d XOR operation of rectangle with region, leaving result in region |
| SYNOPSIS XorRectRegion (region, rectangle) a0 a1 |
| Function Clip away any portion of the region that exists outside of the rectangle. Leave the result in region. |
| INPUTS region = pointer to Region structure rectangle = pointer to Rectangle structure |
| BUCS this one does not work yet |
| |
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BUCS

RESULT

SEE ALSO
ReadPixel

The pixel is changed.

x - the X coordinate within the RastPort at which the selected pixel is located.
y - the Y coordinate.
rp - a pointer to the RastPort to use.

Changes the pen number of the selected pixel in the specified RastPort to that currently specified by PenA, the primary drawing pen. Obey DrawModes and minterms in RastPort.

graphics.library/WritePixel

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graphics.library/WritePixel

WritePixel -- change the pen num of one specific pixel in a specified RasterPort.

al D0 D1

SYNOPSIS WritePixel ()

FUNCTION

INPUTS

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icon.library/AddFreeList This routine adds the specified memory to the free list. The free list will be extended (if required). If there is not enough memory to complete the call, a null is returned. Note that AddFreeList does NOT allocate the requested memory. It only records the memory in the free list. free -- a pointer to a FreeList structure mem -- the base of the memory to be recorded len -- the length of the memory to be recorded AddFreeList - add memory to the free list status -- nonzero if the call succeeded. status = AddFreeList(free, mem, len)
D0 A1 A2 AllocEntry, FreeEntry, FreeEreeList 1con.doc Page 2 icon.library/AddFreeList Dec 4 09:14 1985 EXCEPTIONS SEE ALSO SYNOPSIS FUNCTION RESULTS INPUTS BUCS

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TABLE OF CONTENTS

1con.lbrary/AddFreeList 1con.lbrary/AllockBObject 1con.lbrary/BumpRevision 1con.lbrary/FreeDiskObject 1con.lbrary/FreeEreeList 1con.lbrary/FreeRobject 1con.lbrary/GetDiskObject 1con.lbrary/GetDiskObject 1con.lbrary/GetDiskObject

icon.library/GethBObject icon.library/MatchToolValue icon.library/PutDiskObject icon.library/PutIcon icon.library/PutHBObject

icon.library/BumpRevision "copy of foo"
"copy 2 of foo"
"copy 2 of foo"
"copy 3 of foo"
"copy 30 of foo"
"copy 600"
"copy foo"
"copy foo"
"copy foo"
"copy 0 of foo"
"copy 1 of foo"
"copy 0 of foo"
"copy 0 of foo"
"copy 0 of foo"
"copy 0 of foo" BumpRevision takes a name an turns it into a "copy of name". It knows how to deal with copies of copies. The routine will truncate the new name to the maximum dos name size (currently 30 characters). newbuf - the new buffer that will receive the name (it must be at least 31 characters long). oldname - the original name BumpRevision - reformat a name for a second copy newbuf result = BumpRevision(newbuf, oldname D0 A1 result - a pointer to newbuf Dec 4 09:14 1985 1con.doc Page 4 icon.library/BumpRevision oldname "foo" EXCEPTIONS SYNOPSIS FUNCTION SEE ALSO RESULTS EXAMPLE INPUTS BUCS Icon.library/AllochBObject

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INPUTS

EXCEPTIONS

SEE ALSO

B

object - the WBObject (if memory is available)

AllocEntry, FreeEntry, FreeWBObject

Dec 4 09:14 1985 icon.doc Page 6 FreeDiskObject (diskobj) icon.library/FreeDiskObject EXCEPTIONS FUNCTION SYNOPSIS RESULTS BCS NAME 1con.library/FindToolType This function searches a tool type array for a given entry, and returns a pointer to that entry. This is useful for finding standard tool type variables. The returned value is not a new copy of the string but is only a pointer to the part of the string after typeName. value - a pointer to a string that is the value bound to typeName, or NULL if typeName is not in the toolTypeArray. FindToolType(toolTypeArray, "FILENAME") returns "text"
FindToolType(toolTypeArray, "TEMPDIR") returns ":t"
FindToolType(toolTypeArray, "WAXSIZE") returns NULL FindToolType - find the value of a ToolType variable Assume the tool type array has two strings in it:
"FILETYPE=text"
"TEMPDIR=:t" value = FindToolType(toolTypeArray, typeName
D0 A1 toolTypeArray - an array of strings typeName - the name of the tooltype entry Dec 4 09:14 1985 icon.doc Page 5 lcon.library/FindToolType SEE ALSO MatchToolValue EXCEPTIONS SYNOPSIS FUNCTION RESULTS EXAMPLE 800

NAME
FreeDiskObject - free all memory in a Workdernch disk object
SYNOPSIS
FreeDiskObject (diskobj)
A0
FUNCTION
This routine frees all memory in a Workdernch disk object, and the object itself. It is implemented via FreeFreeList().
GetDiskObject () takes care of all the initialization required to set up the objects free list. This procedure may ONLY be called on DiskObject allocated via GetDiskObject().
INPUTS
diskobj -- a pointer to a DiskObject structure
RESULIS
EXCEPTIONS
SEE ALSO
GetDiskObject, FreeFreeList
BUCS

icon.library/FreeDiskObject

Dec 4 09:14 1985 1con.doc Page 8 icon.library/FreeFreeList A FreeList is a list of MemList structures. See the MemList and MemEntry documentation for more information. This routine frees all memory in a free list, and the free list itself. It is useful for easily getting rid of all memory in a series of structures. There is a free list in a Worldench object, and this contains all the memory associated with that object. If the FreeList itself is in the free list, it must be in the first MemList in the FreeList. FreefreeList - free all memory in a free list INPUTS
free -- a pointer to a FreeList structure AllocEntry, FreeEntry, AddFreeList Dec 4 09:14 1985 Icon.doc Page 7 FreeFreeList (free) icon.library/FreeFreeList EXCEPTIONS SYNCPSIS FUNCTION SEE ALSO RESULTS - A-148 -

icon.library/FreshBObject $\Lambda 110cd B Object()$ takes care of all the initialization required to set up the objects free list. This routine frees all memory in a Worldench object, and the object itself. It is implemented via FreeFreeList(). This routine is intended only for internal users that can track changes to the Workbench. NAME FreeMEODject - free all memory in a Worldench object AllocEntry, FreeEntry, AllockBObject, FreeFreeList INPUTS
free -- a pointer to a FreeList structure FreeMBObject (obj) icon. library/FreekBObject EXCEPTIONS SYNOPSIS SEE ALSO RESULTS

Dec 4 09:14 1985 icon.doc Page 10 via loErr(). icon.library/Geticon routine EXCEPTIONS SYNOPSIS SEE ALSO FUNCTION RESULTS **8**88 Icon. 11brary/GetDiskObject This routine reads in a Workbench disk object in from disk. The name parameter will have a ".info" postpended to it, and the info file of that name will be read. If the call fails, it will return zero. The reason for the failure may be obtained This routine is very similar to Geticon, but shields the programmer from the worst of the grundiness associated with Geticon. A FreeList structure is allocated just after the DiskObject structure; FreeDiskObject makes use of this to get rid of the memory that was allocated. diskobj -- the Workbench disk object in question GetDiskObject - read in a Worldench disk object diskobj = GetDiskObject(name)
D0 Dec 4 09:14 1985 1con.doc Page 9 name -- name of the object GetIcon, FreeDiskObject icon.library/CetDiskObject via loErr(). EXCEPTIONS SEE ALSO SYNOPSIS FUNCTION RESULTS INPUTS

NAME

GetIcon - read in a DiskObject structure from disk

SYNOPSIS

status = GetIcon(name, icon, free)

Di

FUNCTION

This routine reads in a DiskObject structure, and its associated information. All memory will be automatically allocated, and stored in the specified FreeList*. The file name of the info file will be the name parameter with a ".info" postpended to it. If the call fails, a zero will be returned. The reason for the failure may be obtained via loErr().

Users are encouraged to use GetDiskObject instead of this routine

INPUTS

NEBULTS

RESULTS

SEE ALSO

BUCS

BUCS

MatchToolValue - check a tool type variable for a particular value MatchToolValue is useful for parsing a tool type value for a known value. It knows how to parse the syntax for a tool type value (in particular, it knows that '|' separates typeString - a ToolType value (as returned by FindToolType) value - you are interested if value appears in typeString result - a one if the value was in typeString result = MatchToolValue(typeString, value D0 A1 "a") returns 1
"b") returns 1
"d") returns 0
"a|b") returns 0 "text" | returns 1 "data" | returns 0 Assume there are two type strings: type1 = "text" type2 = "a|b|c" Dec 4 09:14 1985 1con.doc Page 12 MatchToolValue (typel, ", MatchToolValue (typel, ", MatchToolValue (type2, ", lcon.library/MatchToolValue alternate values) FindToolType EXCEPTIONS SYNOPSIS FUNCTION SEE ALSO RESULTS EXAMPLE INPUTS NAME BUCS 1con.11brary/CetMBObject This routine reads in a Workbench object in from disk. The name parameter will have a ".info" postpended to it, and the info file of that name will be read. If the call fails, it will return zero. The reason for the failure may be obtained This routine is intended only for internal users that can track changes to the Workbench. object -- the Workbench object in question OstWBObject - read in a Worldbench object Dec 4 09:14 1985 1con.doc Page 11 object = GetWBCbject(name) D0 A0 name -- name of the object icon.library/GetWBObject via IoErr (). EXCEPTIONS SYNOPSIS FUNCTION SEE ALSO RESULTS INPUTS BUCS

icon.library/MatchToolValue

Dec 4 09:14 1985 1con.doc Page 14 via IoErr(). 1con.library/Puticon routine EXCEPTIONS SYNOPSIS FUNCTION SEE ALSO RESULTS INPUTS BUCS icon.library/PutDiskObject This routine writes out a DiskObject structure, and its associated information. The file name of the info file will be the name parameter with a ".info" postpended to it. If the call fails, a zero will be returned. The reason for the failure may be obtained PutDiskObject and PutIcon are functionally identical. They are both provided so there is a Put/Get/Free triple for disk objects. PutDiskObject - write out a DiskObject to disk status -- non-zero if the call succeeded GetDiskObject, FreeDiskObject, PutIcon status = PutDiskObject(name, diskobj D0 A1 name -- name of the object diskobj -- a pointer to a DiskObject Dec 4 09:14 1985 1con.doc Page 13 icon.library/PutDiskObject via loErr(). EXCEPTIONS SYNOPSIS FUNCTION SEE ALSO RESULTS BICS

```
NAME

Pution - write out a DiskObject to disk

SYNESTS

STATESTS

STATESTS
```

Jacon . Library/PuthBObject ion. doc Page 15

Jacon . Library/PuthBObject ion. Jibrary/PuthBObject

NAME

PuthBObject - write out a Merideench object

SYNESIS

status = PuthBObject (name, object)

PO

RUNCION

This routine writes a Merideench object out to disk. The name parameter will have a "Linfo" poutpended to it, and that file name parameter will have a "Linfo" poutpended to it, and that file name parameter will have a "Linfo" poutpended to it, and that file name parameter will have a "Linfo" poutpended to it, and that file name of the failure may be obtained via lebrin.

The reason for the failure may be obtained via lebrin.

The reason for the failure may be obtained via lebrin.

The reason for the Merideench object to he written out status - name of the object to be written out efautus - non-zero if the call succeeded.

EXCEPTIONS

SEE ALSO

BUCS

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Sizabindov
Visabindoves
Visabindoves
Menchinde est
Menchinde est
Mindovinde est
Mindovin

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Additional and the state of the state

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AddCadget

AdCadget

-- add a Gadget to the Gadget list of the Window or Screen AddCadget

SHORT AddCadget (Pointer, Gadget, Position);

Adds the specified Gadget to the Gadget list of the given Window or Screen, linked in at the position in the list specified by the Position argument (that is, if Pos == 0, the Gadget will be inserted at the head of the list, and if Position == 1 then the Gadget will be inserted after the first Gadget and before the second). If the Position you specify is greater than the number of Gadgets in the list, This procedure returns the position at which your Gadget was added. your Gadget will be added to the end of the list. The SCRCANCET Flag of the Gadget specifies whether the Pointer argument points to a Window (SCRCANCET not set) or a Screen (SCRCANCET is set).

list is to specify a Position of -1. That way, only the 65536th (and multiples of it) will be inserted at the wrong position. The return value of the procedure will tell you where it was A relatively safe way to add the Cadget to the end of the actually inserted. MOTE: The System Window and Screen Cadgets are initially added to the front of the Cadget List. The reason for this is: if you position your own Cadgets in some way that interferes with the graphical representation of the system Cadgets, the system's ones will be "hit" first by User. If you then start adding Cadgets to the front of the list, you will disturb this plan, so beware. On the other hand, if you don't violate the design rule of never overlapping your Cadgets, there's no problem.

Cadget = pointer to the new Cadget
Position = integer position in the list for the new Cadget (starting from
zero as the first position in the list) Pointer = pointer to the Window or Screen to get your Cadget

Returns the position of where the Cadget was actually added.

None

SEE ALSO

RemoveGadget ()

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AllocRemember

AllocHem and create a link node to make FreeHem easy AllocRemember

SYNOPSIS

AllocRemember (Remember Key, Size, Elags);

This routine calls the EXEC AllocMem() function for you, but also links the parameters of the allocation into a master list, so that you can simply call the Intuition routine FreeRemember() at a later time to deallocate all allocated memory without being required to remember the details of the memory you've allocated.

This routine will have two primary uses:

Let's say that you're doing a long series of allocations in a procedure (such as the Intuition OpenWindow() procedure). If any one of the allocations falls for lack of memory, you need to abort the procedure. Abandoning ship correctly involves freeling up what memory you've already allocated. This procedure allows you to free up that memory easily, without being required to keep track of how many allocations you already done, what the sizes of the allocations were, where the memory was allocated.

Also, in the more general case, you may do all of the allocations in you entire program using this routine. Then, when your program is exiting, you can free it all up at once with a simple call to FreeRemember().

You create the "anchor" for the allocation master list by creating you call AllocRemember(), the routine actually does two memory allocations, one for the memory you want and the other for a copy of a Remember structure. The Remember structure is filled in with data describing your memory allocation, and it's linked into the master list pointed to by your RememberKey. Then, to a variable that's a pointer to struct Remember, and initializing that pointer to NULL. This is called the RememberKey. Whenever free up any memory that's been allocated, all you have to do is call FreeRemember() with your RememberKey.

As you will see, you Please read the Freekemember() header too. As you will see, yo can select to either free just the link nodes and keep all the allocated memory for yourself, or you can elect to free both the nodes and your memory buffers. See the "Amiga ROM Kernel Manual" for a decsription of the AllocMem() call and the values you should use for the Size and Flags variables.

INPUTS

RememberKay = the address of a pointer to struct Remember. Before the very first call to AllocRemember, initialize this pointer to NULL. For instance:

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AllocRemember (GRememberKey, BUFSIZE, MEMF_CHIP); FreeRemember (&Remember Key, TRUE);

Size = the size in bytes of the memory allocation. Please refer to the EXEC Allockem() function in the "Amiga ROM Kernel Manual"

Flags = the specifications for the memory allocation. Please refer to the EXEC AllocMem() function in the "Amiga ROM Kernel Manual" for details. for details

RESULT

address of your requested memory block. Also, the node to your block will be linked into the list pointed to by your RememberKey variable. If the allocation fails, this routine returns NULL and the list pointed to by RememberKey, if any, will be undisturbed. If the memory allocation is successful, this routine returns the byte

None

reekemember () SEE ALSO

The EXEC AllocMem() function

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AutoRequest

Automatically build and get reponse from a Requester ; AutoRequest

AutoRequest

NA SE

Positive lags, Negative lags, Width, Height); AutoRequest (Window, BodyText, PositiveText, NegativeText,

SYNOPSIS

waits for a response from the user or the system to satisfy your request. If the response is Positive, this procedure returns TRUE. If the response is negative, this procedure returns FALSE. This procedure automatically builds a Requester for you and then

This procedure first preserves the state of the IDGMP values of the Window argument. Then it creates an IDGMPlag specification by merging together your PositiveFlags, NegativeFlags, and the IDGMP class GADGFURP. You may choose to specify no flags for either the Positiveflags or Negativeflags arguments.

your Window pointer and the IDCMP flags. Please refer to BuildSysRequest() for a description of the Intulext that you are It's an important The IntuiText arguments, and the Width and Height values, are passed directly to the BuildSysRequest() procedure along with your Window pointer and the IDCMP flags. Please refer to expected to supply when calling this routine. It's an import: but long-winded description that need not be duplicated here.

If the BuildSysRequest() procedure does not return a pointer to a Window, it will return TRUE or FALSE (not valid structure pointers) instead, and these BOOL values will be returned to you immediately. On the other hand, if a valid Window pointer is returned, that Window will have had its IDCMP Ports and flags initialized according to your specifications. AutoRequest() then waits for an IDCMP message on the UserPort, which message will satisfy one of three requirements: - either the message is of a class that matches

one of your PositiveFlags arguments (if you've supplied any), in which case this routine returns TRUE.

- the message class matches one of your NegativeFlags arguments (if you've supplied any), in which case ò this routine returns FALSE.

the only other possibility is that the IDCMP message is of class CADCETUP, which means that one of the two Gadgets, as specified by the PositiveText and NegativeText arguments, was selected by the user. If the TRUE Cadget was selected, TRUE is returned. If the FALSE Gadget was selected, FALSE is returned.

When the dust has settled, this routine calls FreeSysRequest() if necessary to clean up the Requester and any other allocated memory.

INPUTS

Window = pointer to a Window structure

Dec 3 17:04 1985 intuition.doc Page 8 **Begin**Refresh SYNOPSIS FUNCTION SEE ALSO None None PositiveText = pointer to an IntuiText structure
MegativeText = pointer to an IntuiText structure
PositiveFlags = flags for the IDCMP
MegativeFlags = flags for the IDCMP
Width, Height = the sizes required for the rendering of the Requester complete description of the chain of events that might lead to either of these values being returned. BodyText = pointer to an IntuiText structure Dec 3 17:04 1985 intuition.doc Page 7 BuildSysRequest () SEE ALSO

BeginRefresh For instance, if you have a SIMPLE REFRESH Window which is partially concealed and the user brings it to the front, you will receive a message asking you to refresh your display. If you call BeginRefresh() before doing any of the rendering, then the layer that underlies your Window will be arranged such that the only rendering that will actually After you have performed your refresh of the display, you should call EndRefresh() to reset the state of the layer and the Window. Then you This routine sets up your Window for optimized refreshing. It sets intuition internal states and then sets up the layer underlying your Window for a call to the layer library. There, the "clip rectangles" of the layer are reorganized in a fashion where any rendering performed in your Window (until you call to EndRefresh()) will occur only in the regions which need to be refreshed. The phrase "clip rectangles" refers to the division of your Window into visible and concealed rectangles. message of class REFRESHWINDOW through the IDOMP, or an input event of class IECLASS_REFRESHWINDOW through the Console Device. Whenever you are told that your Window needs refreshing, you should call BeginRefresh() and EndRefresh() to clear the refresh-needed state, even if you don't plan on doing any rendering. You learn that your Window needs refreshing by receiving either a take place will be that which goes to the newly-revealed areas. Window = pointer to the Window structure which needs refreshing For more information about clipping rectangles and the layer library, refer to the "Amiga ROM Kernel Manual". Sets up a Window for optimized refreshing may proceed with rendering to the Window as usual. The "Windows" chapter in this book is very performance-efficient. BeginRefresh (Window); i Beginkefresh EndRefresh()

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BuildSysRequest

PulldSysRequest

-- Build and display a system Requester BuildSysRequest

PositiveText, NegativeText, BuildSyaRequest(Window, BodyText, Po IDCPFlags, Width, Height);

which response may include either selecting one of the Cadgets or causing some other event to be noticed by Intuition (like DISKINSERIED, for instance). After the Requester is satisfied, you should call the FreeSyzRequest() procedure to remove the Requester and free up any Wait() on those ports to detect the user's response to your Requester, This procedure builds a Requester based on the supplied information. If all goes well and the Requester is constructed, this procedure returns a pointer to the Window in which the Requester appears. That Window will have the IDCMP UserPort and WindowPort initialized to reflect the flags found in the IDCMPFlags argument. You may then allocated memory. If it isn't possible to construct the Requester for any reason, this procedure will instead use the text arguments to construct a text string for a call to the DisplayAlert() procedure, and then will return either a TRUE or FALSE depending on whether DisplayAlert() returned A FALSE or TRUE respectively.

created by this routine to be bound to a particular Window, you should If the Window argument you supply is equal to NUIL, a new Window will be created for you in the Workbench Screen. If you want the Requester not supply a Window argument of NULL.

The text arguments are used to construct the display. They are pointers to instances of the struct IntuiText.

the Requester. As usual with IntuiText data, you may link several lines of text together, and the text may be placed in various locations in the Requester. This IntuiText pointer will be stored The Bodyfext argument should be used to describe the nature of In the RegText variable of the new Requester

Retry. Good." If the Requester The PositiveText argument describes the text that you want associated with the user choice of "Yes. TRUE. Retry. Good." If the Requester the DisplayAlert() mechanism is used, this text will be rendered in the lower-left of the Requester, which Gadget will have the GadgetID field set to TRUE. If the Requester cannot be opened and is successfully opened, this text will be rendered in a Gadget in pointer can be set to NULL, which specifies that there is no TRUE the lower-left corner of the Alert display with additional text specifying that the left mouse button will select this choice.

Bad." If the Requester The NegativeText argument describes the text that you want associated Cancel. FALSE. with the user choice of "No.

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is successfully opened, this text will be rendered in a Gadget in the lower-right of the Requester, which Gadget will have the GadgetID field set to FALSE. If the Requester cannot be opened and the DisplayAlert() mechanism is used, this text will be rendered in pointer cannot be set to NULL. There must always be a way for the the lower-right corner of the Alert display with additional text specifying that the right mouse button will select this choice. to cancel this Requester

The Positive and Negative Gadgets created by this routine have the following features: - BOOLCADCET

- RELVERIFY

- REQCADCET - TOCKLESELECT

of the Cadgets. These include defines like AUTODRAMMODE, AUTOLEFIEDCE, AUTOTOPEDCE and AUTOFRONTPEN. You can find these in your local When defining the text for your Gadgets, you may find it convenient to use the special defines used by Intuition for the construction intuition.h (or intuition.i) file.

The Width and Height values describe the size of the Requester. All of your BodyText must fit within the Width and Height of your Requester. The Gadgets will be created to conform to your sizes.

The primary implication of this will be that the IDCMPFlags and Ports will be disturbed by a call to this routine. To assure upward-compatibility, it's your responsibility to make sure that procedure, a new Window is opened in the same Screen as the one containing your Window. However, with a forthcoming update of Intuition, this will change such that the Requester will be opened in the Window supplied as an argument to this routine, if possible. the Ports and IDCMPFlags of the Window passed to the routine are VERY IMPORTANT NOTE: for the preliminary release of this protected before the call.

IDOMPFlags = the IDOMP flags you want used for the initialization of the PositiveText = pointer to an IntuiText structure NegativeText = pointer to an IntuiText structure BodyText = pointer to an IntuiText structure Window = pointer to a Window structure

IDCMP of the Window containing this Requester Width, Height = the size required to render your Requester

Requester was rendered. If, however, the Requester cannot be rendered in the Window, this routine will have called DisplayAlert() before returning and will pass back TRUE if the user pressed the left mouse button and FALSE if the user pressed the right mouse button. returned by this procedure is a pointer to the Window in which the If the Requester was successfully rendered in a Window, the value

This procedure currently opens a Window as wide as the Screen in

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|--|
| ClearDMequest ClearDMequest |
| NAME ClearDMRequest clears the DMRequest of the Window |
| SYNOPSIS ClearDMRequest (Window); |
| Attempts to clear the DWRequester from the specified window. The DWRequester is the special Requester that you attach to the Owble-click of the menu button which the user can then bring up on demand. This routine WILL NOT clear the DWRequester if it's active (in use by the user). After having called SetDWRequest(), if you want to change the DWRequester, the correct way to start is by calling ClearDWRequest() until it returns a value of TRUE; then you can call SetDWRequest() |
| INPUTS Window = pointer to the window from which the DMRequest is to be cleared |
| RESULT If the DWRequest was not currently in use, zeroes out the DWRequest pointer in the Window and returns TRUE. If the DWRequest was currently in use, doesn't change the pointer and returns FALSE |
| BUCS None |
| SEE ALSO SetDMRequest() Request() |
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|---|--|
| | |
| ClearMenuStrip | ClearPointer |
| NAME ClearMenuStrip Clears the Menu strip from the Window | NAME ClearPointer clears the Pointer definition from a Window |
| SYNOPSIS Clear MenuStrip (Window); | SYNOPSIS ClearPointer (Window); |
| FUNCTION Clears the menu strip from the Window. | FUNCTION Clears the Window of its own definition of the Intuition pointer. After colling ClearDeinter() among time this Window is the active |
| IMPUTS Window = pointer to a Window structure | one the default Intuition pointer will be the pointer displayed to the user. If your Window is the active one when this routine is called the change will take place immediately. |
| RESULT None | INPUTS Wilder to the Wilder to be closed as the Deleter Asset to the Control of the Deleter Asset to the Control of the Deleter Asset to the Control of the |
| BUCS None | RESULT. |
| SEE ALSO SetMenuStrip() | None BUCS None |
| | SEE ALSO SetPointer() |
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ClearPointer

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|---|---|
| CloseScreen | CloseWindow |
| NAME CloseScreen Closes an Intuition Screen | NAME CloseWindow |
| SYNOPSIS CloseScreen (Screen); | SYNOPSIS CloseWindow (Wind |
| FUNCTION Unlinks the Screen, unlinks the ViewPort, deallocates everything. Doesn't care whether or not there are still any Windows attached to the Screen. Doesn't try to close any attached Windows; in fact, ignores them altogether. If this is the last Screen to go, attempts to reopen WorkBanch. | FUNCTION Closes an Intuit its memory, and without the Wind |
| INPUTS Screen = pointer to the Screen to be deallocated | CloseMinow() on Reply()'d to all in turn will so without waiting |
| None BUCS | Another grim not a call to SetMen |
| Don't think so | CloseWindow() do currently being |
| OpenScreen | happens to be the button the system quite lovely. |
| | INPUTS Window = a point |
| | RESULT None |
| | BUCS Don't think so. |
| | SEE ALSO OpenWindow(), Cl |
| | |
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| | |
| | |

| Dec.,3 17:04 1985 intuition.doc Page 16 |
|--|
| CloseMindow |
| NAME CloseWindow Closes an Intuition Window |
| SYNOPSIS CloseWindow (Window); |
| EUNCTION Closes an Intuition Window. Unlinks it from the system, unallocates its memory, and if its Screen is a system one that would be empty without the Window, closes the system Screen too |
| A Grim, Foreboding Note: 1f you are ever rude enough to CloseMindow() on a Window that has an IDCME without first having Reply()'d to all of my messages to the IDCME port, Intuition in turn will so rude as to reclaim and deallocate its messages without waiting for your permission. |
| Another grim note: if you have added a Menu strip to this Window (via a call to SetMenuStrip()) you must be sure to remove that Menu strip (via a call to ClearMenuStrip()) before closing your Window. CloseMindow() doesn't check whether or not the menus of your Window are currently being used when the Window is closed. If this in fact happens to be the case, then as soon as the user releases the Menu button the system will crash with pyrotechnics that are usually quite lovely. |
| INPUTS Window = a pointer to a Window structure |
| RESULT None |
| BUCS Don't think so. What do you think? |
| SEE ALSO OpenWindow(), CloseScreen() |
| |
| |

| | Dec 3 17:04 1985 intuition.doc Page 17 | Dec 3 17:04 1985 intuition.doc Page 18 |
|-----|--|---|
| | CloseMorkBench CloseMorkBench | Ourrentlime |
| | NAME CloseMorkBanch Closes the Worldbanch Screen | NAME CurrentTime Get the current time va |
| | SYNOPSIS BOOL CloseMorkBench(); | SYNOPSIS ULONG Seconds, Micros; OurrentTime (ASociands - EMicros) |
| | FUNCTION This routine attempts to close the WorkBench. The actions taken are: - Test whether or not any applications have opened Windows on the | FUNCTION Puts copies of the current time into the |
| | Morteard, and return record to Course wise Clean up all special buffers - Close the WorkBarch Screen - Make the WorkBarch program mostly inactive (it will still | This time value is not extremely accurate resolution. This time will be updated a second, and will typically be updated |
| | monitor disk activity) - Return TRUE INPUTS | INPUTS Seconds = pointer to a LONG variable to Micros = pointer to a LONG variable for |
| - A | None RESULT | RESULT Puts the time values into the memory loc |
| -16 | IRUE if the WorkBench Screen closed successfully FALSE if anything went wrong and the WorkBench Screen is still out there | BUCS |
| 1 - | BUCS None | SEE ALSO |
| | SEE ALSO None | NOTICE |
| | | |
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| NAME CurrentIlme Get the current time values SYNCESIS ULONG Seconds, Micros; CurrentIlme (GSeconds, GMicros); EUNCTION Puts copies of the current time into the supplied argument pointerry that cime value is not extremely accurate, nor is it of a very finrescolution. This time vill be updated no more than sixty times a second. INPUTS Seconds = pointer to a LONG variable to receive the current second Micros = pointer to a LONG variable for the current microseconds vy RESULT Puts the time values into the memory locations specified by the ary BUCS None SEE ALSO None | OurrentTime | urentTime SSIS ANG Seconds, Mi urentTime (&Seco | FUNCTION Puts copies of the current time into the supplied argument pointers. This time value is not extremely accurate, nor is it of a very fine resolution. This time will be updated no more than sixty times a a second, and will typically be updated far fewer times a second. | IMPUTS Seconds = pointer to a LONG variable to receive the current seconds value Micros = pointer to a LONG variable for the current microseconds value | RESULT Puts the time values into the memory locations specified by the arguments | BUCS None | SEE ALSO None | | |
|--|-------------|--|--|---|--|--------------|---------------|--|--|
|--|-------------|--|--|---|--|--------------|---------------|--|--|

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DisplayAlert

-- Create a display of an Alert message DisplayAlert

SYNOPSIS

DisplayAlert (AlertNumber, String, Height);

FUNCTION

Creates an Alert display with the specified message.

If the system can recover from this Alert, its a RECOVERY_ALERT and this routine waits until the user presses one of the mouse buttons, after which the display is restored to its original state and a BOOL value is returned by this routine to specify whether or not the User pressed the LEFT mouse button.

and this routine returns immediately upon creating the Alert display. The return value is FALSE. If the system cannot recover from this Alert, it's a DEADEND_ALERT

The Alerthumber is a LONG value, related to the value sent to the Alert() routine. But the only bits that are pertinent to this routine are the ALERI_IYPE bits. These bits must be set to either RECOVERY_ALERI for Alerts from which the system may safely recover, or DEADEND_ALERI for those fatal Alerts. These states are described in the paragraph above. There is a third type of Alert, the DAISY_ALERI, which is used only by the Executive.

The AlertMessage The String argument points to an AlertMessage string. The Alert string is comprised of one or more substrings, each of which is comprised of the following components:

describing where on the Alert display you want this string to appear. The y-coordinate describes the offset to the baseline of the text. - first, a 16-bit x-coordinate and an 8-bit y-coordinate,

then, the bytes of the string itself, which must be

continuation byte is non-zero, there IS another substring to be processed in this Alert Message. If the continuation not there's another substring following this one. If the lastly, the continuation byte, which specifies whether or null-terminated (end with a byte of zero)

describes how many video lines tall you want the Alert display to be. The last argument, Height,

byte is zero, this is the last substring in the message.

The only pertinent bits AlertNumber = the number of this Alert Massage. The only pertinent bit of this number are the ALERT_TYPE bits. The rest of the number is ignored by this routine

String = pointer to the Alert message string, as described above Height = minimum display lines required for your message

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is always the return value. If this is a RECOVERY MERT. The return value will be TRUE if the User presses the left mouse button in response to your message, and FALSE if the User presses the right hand If this is a DEADEND_ALERT, FALSE button is response to your text. A BOOL value of TRUE or FALSE.

DisplayAlert

If the system is worse off than you think, the level of your Alert may become DEADEND_ALERI without you ever knowing about it.

SEE ALSO None

| DisplayBeep Dov | eps" the video display | "Beeps" the video display by flashing the background color of the specified Screen. If the Screen argument is NULL, every Screen is not in the display will be beeped. Flashing everyone's Screen is not a polite thing to do, so this should be reserved for dire circumstances. | The reason such a routine is supported is because the Amiga has no internal bell or speaker. When the user needs to know of an event that is not serious enough to require the use of a Requester, The time values at the DisplayBeep() function should be called. | UTS Screen = pointer to a Screen. If NULL, every Screen in the display Vill be flashed CurrentSeconds. Ci | RESULT. | If the difference double-click time function returns I | BUGS None | SEE ALSO CurrentIlme(); | |
|-----------------|------------------------|---|--|--|----------------|--|------------------|-------------------------|--|
| | Scree | FUNCTION "Besps" the video display specified Screen. If the in the display will be be a polite thing to do, so circumstances. | he reason such a routine o internal bell or speak n event that is not serl he DisplayBeep() functio | INPUIS Screen = pointer to a Screen will be flashed | RESULT None | BUCS None | SEE ALSO None | | |

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|--|---|--|
| DrawBorder | DrawBorder | DrawImage |
| NAME DrawBorder | draws the specified border into the RastPort | NAME DrawImage draws the specified Imag |
| SYNOPSIS DrawBorder (RastPort, | <pre>astPort, Border, LeftOffset, TopOffset);</pre> | SYNOPSIS DrawImage(RastPort, Image, LeftOffset, |
| FUNCTION First, sets up the Dra arguments of the Borde the Border argument in This routine does Intu draw a line outside of | Eirst, sets up the DrawMode and Pens in the RastPort according to the arguments of the Border structure. Then, draws the vectors of the Border argument into the RastPort, offset by the Left and Top Offsets. This routine does Intuition window clipping as appropriate if you draw a line outside of your Window, your imagery will be clipped at the Window's edge. | FUNCTION First, sets up the DrawMode and Pens in arguments of the Image structure. Then the Image argument into the RastPort, o This routine does Intuition window clip draw an image outside of your Window, y clipped at the Window's edge. |
| If the NextBo the next Bord this FUNCTION | If the NextBorder field of the Border argument is non-zero, the next Border is rendered as well (return to the top of this FUNCTION section for details). | If the NextImage field of the Image arg the next Image is rendered as well (ref this FUNCTION section for details). |
| INPUTS RastPort = pointer to Border = pointer to a LeftOffset = the offset Topoffset = the offset | WINS RastPort = pointer to the RastPort to receive the border crossing Border = pointer to a Border structure LeftOffset = the offset which will be added to each vector's x coordinate TopOffset = the offset which will be added to each vector's y coordinate | NRPUTS RastPort = pointer to the RastPort to rainsys = pointer to an Image structure LeftOffset = the offset which will be a TopOffset = the offset which will be ad |
| RESULT None | | RESULT None |
| BUCS | | BUCS None |
| SEE ALSO None | | SEE ALSO None |
| | | |
| | | |

| WE Drawin Prawin | DrawImage | mage draws the specified Image into the RastPort | OPSIS DrawImage(RastPort, Image, LeftOffset, TopOffset); | CIION First, sets up the DrawMode and Pens in the RastPort according to the arguments of the Image structure. Then, moves the image data of the Image argument into the RastPort, offset by the Left and Top Offsets. This routine does Intuition window clipping as appropriate if you draw an image outside of your Window, your imagery will be clipped at the Window's edge. | If the NaxtImage field of the Image argument is non-zero, the next Image is rendered as well (return to the top of this FUNCTION section for details). | UTS RastPort = pointer to the RastPort to receive the border crossing Image = pointer to an Image structure LeftOffset = the offset which will be added to the Image's x coordinate TopOffset = the offset which will be added to the Image's y coordinate | | | | | | |
|--|-----------|--|---|--|--|--|----------------|--------------|------------------|--|--|--|
| | Drawlmage | | SYNOPSIS DrawImage (RastPort | FUNCTION First, sets up the arguments of the lthe Image argument This routine does draw an image outs clipped at the Wir | If the NextImage 1 the next Image is this FUNCTION sect | INPUTS RastPort = pointer Image = pointer to LeftOffset = the of TopOffset = the of | RESULT None | BUCS None | SEE ALSO None | | | |

EndRefresh This function gets you out of the special refresh state of your Window. It is called following a call to BeginRefresh(), which routine puts you into the special refresh state. While your Window is in the refresh state, the only rendering that will be wrought in your Window will be to those areas which were recently revealed and After you've done all the refreshing you want to do for this Window, you should call this routine to restore the Window to its non-refreshing state. Then all rendering will go to the entire Window, as usual. INPUTS

Window = pointer to the Window currently in optimized-refresh mode

Complete = Boolean IRUE or FALSE describing whether or not this

Window is completely refreshed The Complete argument is a boolean TRUE or FALSE value used to describe whether or not the refreshing you've done was all the refreshing that needs to be done at this time. Most often, this targument will be TRUE. But if, for instance, you have multiple tasks or multiple procedure calls which must run to completely refresh the Window, then each can call its own Begin/EndRefresh() pair with a Complete argument of FALSE, and only the last calls with a Complete argument of TRUE. EndRefresh -- Ends the optimized refresh state of the Window Dec 3 17:04 1985 intuition.doc Page 25 BeginRefresh() The "Screens" chapter in this book EndRefresh (Window, Complete); need to be refreshed. **EndRefresh** SYNOPSIS FUNCTION None RESULT - A-165 -

| EndRequest NAME BIGREQUEST SYNOPSIS EndReque EndReq |
|--|
|--|

FreeRemember This function frees up memory allocated by the AllocRemember () function. It will either free up just the Remember structures, which supply the link nodes that tie your allocations together, or it will deallocate both the link nodes AND your memory buffers too. If you want to deallocate just the Remember structure link nodes, you should set the ReallyForget argument to FALSE. However, if you want FreeRemember to really forget about all the memory, including both the Remember structure link nodes and the buffers you requested via earlier calls to AllocRemember() then you should set the ReallyForget argument to TRUE. RememberKey = the address of a pointer to struct Remember. This pointer should either be NULL or set to some value (possibly NULL) by a call to AllocRemember(). For example: struct Remember **Remember** **Remember -- Free memory allocated by calls to AllocRemember () Allockensener (&RememberKey, BUESIZE, MEME_CHIP); FreeRemsener (&RememberKey, TRUE); FreeRemsener (&RememberKey, TRUE); Whether you want to free up only the Remember nodes or 1f you want this procedure to really forget about all of the memory, including both the nodes and the memory buffers FreeRemember (Remember Key, Really Forget); Dec 3 17:04 1985 intuition.doc Page 27 Remember Key = NULL; pointed to by the nodes. AllocRemember () Freekenember Freekemember SYNOPSIS FUNCTION SEE ALSO INPUTS RESULT **B**CS

| FreeSysRequest |
|--|
| NAME FreeSysRequest Frees up memory used by a call to BuildSysRequest() |
| SYNOPSIS FreeSysRequest (Window); |
| FUNCTION This routine frees up all memory allocated by a successful call to the BuildSysRequest() procedure. If BuildSysRequest() returned a pointer to a Window, then you are able to Wait() on the message port of that Window to detect an event which satisfies the Requester. When you want to remove the Requester, you call this procedure. It ends the Requester and deallocates any memory used in the creation of the Requester. |
| NOTE: if BuildSysRequest() did not return a pointer to a Window, you should not call FreeSysRequest()! |
| IMPUTS Window = a copy of the Window pointer returned by a successful call to the BulldSysRequest() procedure |
| RESULT None |
| BUCS None |
| SEE ALSO BuildSysRequest() The Executive's Wait() instruction AutoRequest() |
| |
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| |
| |

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| Dec 3 17:04 1985 intuition.doc Page 29 | Dec 3 17:04 1985 intuition.doc Page 30 |
|--|--|
| GetDefPrefs | GetPrefs |
| NAME GetDefPrefs Get a copy of the the Intuition default Preferences | efs Get the current setting of the Intuition Preferences |
| SYNOPSIS Getbefrefs (PrefBuffer, Size); | SYNOPSIS CetPrefs(PrefBuffer, Size); |
| FUNCTION Gets a copy of the Intuition default preferences data. Writes the data into the buffer you specify. The number of bytes you want copied is specified by the Size argument. | FUNCTION Cets a copy of the current Intuition Preferences data. Writes the data into the buffer you specify. The number of bytes you want copied is specified by the Size argument. |
| The default Preferences are those that Intuition uses when it is first opened. If no preferences file is found, these are the preferences that are used. These would also be the startup Preferences in an AmigaDOS-less environment. | It is legal to take a partial copy of the Preferences structure. The more pertinent Preferences variables have been grouped near the top of the structure to facilitate the memory conservation that can be had by taking a copy of only some of the Preferences structure. |
| It is legal to take a partial copy of the Preferences structure. The more pertinent Preferences variables have been grouped near the top of the structure to facilitate the memory conservation that can be had by taking a copy of only some of the Preferences structure. | INPUTS PrefBuffer = pointer to the memory buffer to receive your copy of the Intuition Preferences Size = the number of bytes in your PrefBuffer, the number of bytes you want copied from the system's internal Preference settings |
| IMPUIS PrefBuffer = pointer to the memory buffer to receive your copy of the Intuition Preferences Size = the number of bytes in your PrefBuffer, the number of bytes you want copied from the system's internal Preference settings | St. |
| RESULT Returns your Preferences pointer | None SEE ALSO |
| BUCS None | GetDefPrefs() |
| SEE ALSO GetPrefs() | |
| | |
| | |
| | |
| | |
| | |

CetPrefs

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|---|--|
| InitRequester | IntuiTextLength |
| NAME InitRequester initializes a Requester structure | NAME IntuiTextLength Return the length (pixel-width) of an IntuiText |
| SYNCPSIS InitRequester (Requester); | SYNOPSIS IntulTextLength(IText); |
| FUNCTION Initializes a requester for general use. After calling initRequester, you need fill in only those Requester values that fit your needs. The other values are set to states that intuition regards as NULL | FUNCTION This routine accepts a pointer to an instance of an Intuilext structure and returns the length (the pixel-width) of the string that that instance of the structure represents. |
| IMPUTS Requester = a pointer to a Requester | All of the usual IntuiText rules apply. Most notably, if the Font pointer of the structure is set to NULL, you'll get the pixel-width of want text in terms of the current default fant |
| RESULT None | INDUTS I Taxt = bointer to an instance of an Intuilext structure |
| BUCS None | RESULT Returns the nivel-width of the text specified by the Intuitert data |
| SEE ALSO None | BUCS None |
| | SEE ALSO |
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IntuiTextLength

| Dec 3 17:04 1985 intuition.doc Page 33 | Dec 3 17:04 1985 intuition.doc Page 34 |
|---|---|
| ItemAddress | MakeScreen |
| NAME ItemAddress Returns the address of the specified MenuItem | Make Screen Do an Intuition-integra |
| SYNOPSIS ItemAddress (MenuStrip, MenuNimber); | SYNOPSIS MakeScreen (Screen); |
| FUNCTION This routine feels through the specified MenuStrip and returns the address of the Item specified by the MenuNumber. Typically, you will use this routine to get the address of a MenuItem from a Menulumber sent to you by Intuition after User has played with your Menue. | FUNCTION This procedure allows you to do a MakeVI Custom Screen in an Intuition-integrated do your own Screen manipulations without with Intuition's usage of the same Viewi |
| Milk routine requires that the arguments are well-defined. MenuNumber may be equal to MENUNUIL, in which case this routine returns NUIL. If MenuNumber doesn't equal MENUNUIL, it's presumed to be a valid Item number selector for your MenuStrip, which includes: - a valid Item number - a valid Item Number - if the Item specified by the above two components has a Subltem, the MenuNumber may have a Subltem component too | After calling this routine, you can call incorporate the new ViewPort of your cus Intuition display. INPUTS Screen = address of the Custom Screen st RESULT |
| Note that there must be BOTH a Menu number and an Item number. Because a Subitem specifier is optional, the address returned by this routine may point to either an Item or a Subitem. | None BUCS None |
| INPUTS MenuStrip = a pointer to the first Menu in your MenuStrip MenuNumber = the value which contains the packed data that selects the Menu and Item (and SubItem) | SEE ALSO RethinkDisplay() RemakeDisplay() The graphics library's MakeVPort() |
| RESULT If MenuNumber == MENUNUL, this routine returns NUL. else this routine returns the address of the MenuItem specified by MenuNumber | |
| BUCS None | |
| SEE ALSO The "Memus" chapter in this book for more information about MenuNumbers | |
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| | |

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ModifyIDOM

Modify the state of the Window's IDCMP

SYNOPSIS

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Mod1fyIDOM

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ModifyIDGTP (Window, IDGTPFlags);

FUNCTION

This routine modifies the state of your Window's IDCMP (Intuition Direct Communication Message Port). The state is modified to reflect your desires as described by the flag bits in the value IDCMFFlags. When you call ModifyIDCMP(), if the IDCMFFlags equals NULL, you are asking that if the Port is currently opened, you want it closed. If you set any of the IDCMFFlags, this means that you want the message ports to be open; if not currently opened, the Ports will be opened now.

The four actions that might be taken are: - if there is currently no IDCMP in the given Window, and IDCMPFlags is NULL, nothing happens

if there is currently no IDCMP in the given Window, and any of the IDCMPFlags is selected (set), then the IDCMP of the Window is created, including allocating and initializing the message ports and allocating a Signal bit for your Port. See the "Input and Output Methods" chapter of this book for full details

Intuition to close the Ports, free the buffers and free your Signal bit. You MUST be the same Task that was active if the IDCMP for the given Window is opened, and the IDCMPFlags argument is NULL, this says that you want

argument is not NULL, this means that you want to change the state of which events will be broadcast to you through the IDQMP if the IDOMP for the given Window is opened, and the IDOMPFlags when this Signal bit was allocated

NOTE: You can set up the Window-VüserPort to any Port of your own before you call ModifyIDCMP(). If IDCMFFlags is non-null but your UserPort is already initialized, Intuition will assume that it's a valid Port with Task and Signal data preset and Intuition won't disturb your set up at all, Intuition will just allocate the Intuition Message Port half of it. The converse is true as well: if UserPort is NULL when you call here with IDCMFFlags == NULL, I'll deallocate only the Intuition Port. This allows you to use a Port that you already have allocated:

- OpenWindow() with IDCMFFlags equal to NULL (open no ports)
- set the UserPort variable of your Window to any valid Port of your

own choosing

call ModifyIDCMP with IDCMPFlags set to what you want then, to clean up later, set UserPort equal to NULL before calling CloseWindow() (leave IDCMPFlags alone)

A G-im, Foreboding Note: if you are ever rude enough to close an IDCMP without first having Reply()'d to all of the messages sent to the IDCMP port, Intuition in turn will so rude as to reclaim and deallocate its messages without waiting for your permission.

IDCMPFlags = the flag bits describing the new desired state of the IDCMP Window = pointer to the Window structure containing the IDCMP Ports Dec 3 17:04 1985 intuition.doc Page 36 INPUTS RESULT

ModifyIDCMP

None

888

None

SEE ALSO

OpenWindow

- A-170 -

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|---|--|
| Mod1 fyProp | MoveScreen |
| NAME ModifyProp Modify the current parameters of a Proportional Gadget | NAME MoveScreen attempts to move the Screen by the delta amounts |
| <pre>SYNUPSIS ModifyProp(Gadget, Pointer, Requester,</pre> | SYNOPSIS MoveScreen(Screen, DeltaX, DeltaY); |
| FUNCTION Modifies the parameters of the specified Proportional Gadget. The Gadget's internal state is then recalculated and the imagery is redisplayed, wherever it is that the Pointer argument points. | FUNCTION Attempts to move the specified Screen. This movement must follow certain constraints (only for the current release of the software): - the bottom of the Screen must not move higher than the bottom of the video display |
| The Pointer argument can point to either a Window or a Screen structure. Which it actually points to is decided by examining the SCRCADCET flag of the Cadget; if the flag is set, Pointer points to a Screen structure, otherwise it points to a Window structure. | If the DeltaX and DeltaY variables you specify would move the Screen in a way that violates the above restrictions, the Screen will be moved as far as possible |
| The Requester variable can point to a Requester structure. If the Cadget has the RECANCET flag set, the Cadget is in a Requester and the Pointer must necessarily point to a Window. If this is not the Cadget of a Requester, the Requester argument may be NULL. | INPUTS Screen = pointer to a Screen structure Scheen = pointer to move the screen on the x-axis DeltaX = amount to move the screen on the y-axis DeltaY = amount to move the screen on the y-axis |
| Proproadget = pointer to a Proportional Gadget Proproadget = pointer to the "owning" display element of the Cadget, be it a Window or a Screen Requester = pointer to a Requester (may be NULL if this isn't a Requester Gadget) Flags = value to be stored in the Flags variable of the Propinfo Horizpot = value to be stored in the Worizpot variable of the Propinfo VertPot = value to be stored in the HorizBody variable of the Propinfo HorizBody = value to be stored in the VertBody variable of the Propinfo VertBody = value to be stored in the VertBody variable of the Propinfo | None BUCS None SEE ALSO None |
| RESULT None BUCS | , |
| None | |
| | |
| | |

MoveScreen

The Pointer argument can point to either a Window or a Screen structure. Which it actually points to is decided by examining the SCRCADCT flag of the Cadget; if the flag is set, Pointer points to a Screen structure, else it points to a Window structure. The Requester variable can point to a Requester structure. If the Cadget has the RECCADCT flag set, the Cadget is in a Requester and the Pointer must necessarily point to a Window. If this is not the Cadget = pointer to the Cadget that you want disabled Pointer = pointer to either a Screen or Window structure (defined by the NOTE: it's never safe to tinker with the Gadget list yourself. supply some Gadget that Intuition hasn't already processed in Requester = pointer to a Requester (may by NULL if this isn't a Requester Gadget list) This command disables the specified Gadget. When a Gadget is NOTE: if you have specified that this is the Gadget list of a Requester, that Requester must be currently displayed Cadget of a Requester, the Requester argument may be NULL. -- disables the specified Gadget - the Cadget cannot be selected by User disabled, these things happen:
- its imagery is displayed ghosted
- the GADGDISABLED flag is set OffGadget (Gadget, Pointer, Requester); SCRCANCET flag of the Gadget) 3 17:04 1985 intuition.doc Page the usual way. Of fCadget OffGadget SEE ALSO None None None 88 MoveWindow Window = pointer to the structure of the Window to be moved DeltaX = signed value describing how far to move the Window on the x-axis DeltaY = signed value describing how far to move the Window on the y-axis This routine sends a request to intuition asking to move the Window the specified distance. The delta arguments describe how far to move the Window along the respective axes. This routine does no error-checking. If your delta values specify some far corner of the Universe, Intuition will attempt to move your Window to the far corners of the Universe. Because of the distortions in the space-time continuum that can result from this, as predicted by special relativity, the result is generally not a pretty sight. which happens currently at a minimum rate of ten times per second, Note that the Window will not be moved immediately, but rather will be moved the next time Intuition receives an input event, Ask Intuition to move a Window SizeWindow(), WindowToFront(), WindowToBack() and a maximum of sixty times a second. Dec 3 17:04 1985 intuition.doc Page 39 MoveWindow(Window, DeltaX, DeltaY); MoveWindow MoveWindow

Don't

Of fCadget

INPUTS

None

RESULT

SYNOPSIS

FUNCTION

| | Dec 3 17:04 1985 intuition.doc Page 41 | | Dec 3 17:04 19 |
|-------|--|---|--|
| | Of Effern | | OnGadget |
| | NAME Office disables the given menu or menu item | • | NAME OnCadget |
| | SYNCESIS Officeru (Window, MenuNumber); | | SYNOPSIS OnCadget (Cad |
| | FUNCTION This command disables a sub-item, an item, or a whole menu If the base of the menu number matches the menu currently revealed, the menustrip is redisplayed | | FUNCTION This command enabled, the |
| | INDVINS Window = pointer to the window MenuNumber = the menu piece to be enabled | | - the G - the G The Pointer |
| | RESULT None | | Structure: SCRCADCET fla |
| - A- | | | The Requester has the REQCY Pointer must Gadget of a 1 |
| 173 - | SEE ALSO None | | NOTE: It's r supply some (the usual way |
| | | | NOTE: If you a Requester, |
| | | | INPUTS |
| | | | Requester = p Request |
| | | | RESULT None |
| | | | BUCS None |
| | | | SEE ALSO None |
| | | | |
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| | | _ | |

OnCadget -- enables the specified Cadget
SNORSIS
ONCAGET
ONCAGGET (Cadget, Pointer, Requester);
FUNCTION
This command enables the specified Cadget. When a Cadget is enabled, these things happen:
- its imagery is displayed normally (not ghosted)
- the Cadcar Can thereafter be selected by the user
- the Cadget can thereafter be selected by the user
The Pointer argument can point to either a Window or a Screen structure; which it actually points to is decided by examining the SCRANCET flag of the Cadget: if the flag is set, Pointer points to a Screen structure. If the flag is set, Pointer points to a Screen structure. If the Cadget is in a Requester variable can point to a Mindow.

The Requester variable can point to a Window.

NOTE: It's newer safe to tinder with the Cadget list set the Cadget is not the Cadget of a Requester argument may be NULL.

NOTE: If you have specified that this is the Cadget list of a Requester to the Cadget that you want enabled pointer to the Cadget that you want enabled Pointer = pointer to a the Cadget (any be NULL if this isn't a Requester = pointer to a the Cadget (any be NULL if this isn't a Requester Cadget list)

Requester = Cadget list)

RESULT

NOTE

SET ALSO

NOTE

SET ALSO

NOTE

OnGadget

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| Word Coffeen - cambles the given menu or menu item STRONGESS STR | Dec 3 17:04 1985 intuition.doc Page 43 | Dec 3 17:04 1985 intuition.doc Page 44 |
|--|---|--|
| SYMOTOSIS | OrWenu | |
| STRCESIS Ordern (Window, Menuhumber); FUNCTION FUNCTION This command enables a sub-item, an item, or a whole menu. If the base of the menu number matches the menu currently revealed, INFUTS Window = pointer to the window Menuhumber = the menu place to be enabled RESULT None BUCS None STE ALSO None STE ALSO None | Menu | penScreen |
| TION Tables command enables a sub-item, an item, or a whole menu. It the base of the menu number matches the menu currently revealed, BY Indow = pointer to the window Indow = pointer to the window The menu place to be enabled The menu plac | SYNOPSIS OnWenu (Window, MenuNumber); | SYNOPSIS OpenScreen (NewScreen); |
| We menustrip is redisplayed. INUTS INUTS Mindow = pointer to the vindow Menultumber = the menu place to be enabled RESULT None SEE ALSO None SEE ALSO None | FUNCTION This command enables a sub-item, an item, or a whole menu. If the base of the menu number matches the menu currently revealed, | where NewScreen is a structure is initial Left, Top, Width, Height, Depth, De ViewModes, Type, Font, DefaultTitle |
| BLCS None SEE ALSO None | menustrip is redis dow = pointer to th iNumber = the menu | FUNCTION Opens an Intuition Screen according to Does all the allocations, sets up the Substructures completely, and links this Intuition's View of the world. |
| None SEE ALSO None None | RESULT None | Before you call OpenScreen(), you must a NewScreen structure. NewScreen is a |
| None None | BUCS None | all of the arguments needed to open a Structure may be discarded immediately the Screen. |
| INPUTS NewGoreen = pointer to an instance of a That structure is initialized with the That structure is initial x-position of your Screen Top = initial x-position of the opening Width = the width for this Screen's Rasi Haight = the haight for his Screen's Rasi Haight = pen number for details (110 Blockfen = pen number for block fills (170 Plockfen = pen number for blockfen = pen number for blockfen = pen number for pour pen BINTES for this screen HIRES for this screen HIRES for this Screen SPRITES for this Screen SPRITES for this Screen SPRITES for this SPRITES | | The TextAttr pointer that you supply as used as the default font for all Intuit appears in the Screen and its Windows. not limited to, the text on the title b |
| NewScreen = pointer to an instance of a That structure is initialized with the Test = initial x-position of your Screen Top = initial x-position of the opening Width = the height for this Screen's Ras Height = the height for his Screen's Ras Depth = number of Billplane Depth = number of Billplane Detailen = pen number for block fills (Ing Blocken = pen number for block fills (Ing Stocken = pen number for block fills (Ing Type = Screen type (If you are not Intu Type = Screen type (If you are not Intu Type = Screen type (If you are not Intu Type = Screen type (If you are not Intu Type = Screen type (If you are not Intu Type = Screen type (Intuition to Type = Screen type (Intuition to Type = Screen type (Intuition to Type = Appropriate argument for Type = Screen type (Intuition to Type = Screen type (Intuition to Type = Appropriate argument for Type = Screen type (Intuition to Type = Type Intuition to Type Intu | | The SHOWITILE flag is set to IRUE by de To change this, you must call the routin |
| Top = initial yrosition of the opening Width = the width for this Screen's Rasi Height = the health for his Screen's Rasi Depth = number of BitPlanes DetailPen = pen number for details (like BlockPen = pen number for block fills (like) CUSTOMSCREEN) - Types of CUSTOMSCREEN this is your own BitMap for Intuition to display memory for you. ViewModes = the appropriate argument for these might include: HIRES for this screen INTERLACE for this Sore Bull Fent = pointer to the default TextAttr is Fent = pointer to the default for the fent in the sent in th | | NewScreen = pointer to an instance of a That structure is initialized with the |
| DetailPen = pen number for details (like BlockPen = pen number for block fills () Type = Screen type (if you are not Intu- equal to CUSTOWSCREEN). Types of CUSTOWSCREEN). Types of CUSTOWSCREEN - this is you your own BitMap for Intuition to display memory for you. ViewModes = the appropriate argument for HIRES for this screen INTERLACE for the dis SPRITES for this Screen INTERLACE for the dis DUALPF for dual-play! | | Top = initial x-position of the opening Width = the width for this Screen's Ras Height = the height for his Screen's Ras Front = the height for his Screen's Ras |
| CUSIONSCATEEN this is yo You may also set the Type flags (| | Deptin - number of birtanes DetailPen = pen number for details (110a Blockfen = pen number for block fills (1 Type = Screen type (if you are not Intui equal to CUSTOMSCREEN). Types or |
| Viewmoods = Unb appropriate argument for this screen HIRES for this screen INTERLACE for the dis SPRITES for this Screen SPRITES for this Screen SPRITES for this Screen DUALPE for dual-play. | | CUSTOMSCREEN this is your own BitMap for Intuition to display memory for you. |
| SPRITES for this Scre UNALPE for the Aual Diagram to the default Tartattr s | | Viewnodes = the appropriate argument for these might include: HIRES for this screen INTERLACE for the dis |
| | | SPRITES for this Scre UNALIPE for this Holay Fort = pointer to the default TextAttr |

Dec 3 17:04 1985 intuition.doc Page 46 FUNCTION all Windows that open in this Screen
DefaultTitle = pointer to a line of text that will be displayed along the
Screen's Title Bar. Null terminated, or just a NULL pointer to get no text
Gadgets = first in a linked list of the Gadgets you want for this Screen
CustomBitMap = if you're not supplying a custom BitMap, this value is
ignored. However, if you have your own display memory that you
want used for this Screen, the CustomBitMap argument should point to the BitMap that describes your display memory. See the "Screens" chapter and the "Amiga ROM Kernel Manual" for more information about BitMaps. If all is well, returns the pointer to your new Screen If anything goes wrong, returns $\ensuremath{\mathsf{NULL}}$ Dec 3 17:04 1985 intuition.doc Page 45 **OpenWindow** No way SEE ALSO RESULT 800

OpenMindow Opens an Intuition window of the given height, width and depth, including already via a call to OpenScreen(). Then Intuition uses your screen argument for the pertinent information needed to get your Window going. On the other hand, if type = one of the Intuition's standard Screens, your screen argument is ignored. Instead, Flags = specifiers for your 'quirements of this window, including:
- which system Cadgets you want attached to your window:
- WINDOWDRAG allows this Window to be dragged
- WINDOWDEPIH lets the user depth-arrange this Window
- WINDOWCLOSE attaches the standard Close Gadget The DetailPen and the BlockPen are used for system rendering; for instance, the Title bar is first filled using the BlockPen, and then the Gadgets and text are rendered using DetailPen. You can either choose to supply special pens for your Window, or, by setting either of these arguments to -1, the Screen's Pens will be used instead. Height = the initial height of this window DetailPen = pen number (or -1) for the rendering of Window details (like gadgets or text in title bar) BlockPen = pen number (or -1) for Window block fills (like Title Bar) the specified system Cadgets as well as any of your own. Allocates Intuition will check to see whether or not that Screen already exists: if it doesn't, it will be opened first before Intuition opens your window in the Standard Screen. If the flag SUPER BITMAP is set, the bitmap variable must point to Left, Top, Width, Height, DetailPen, BlockPen, Flags, IDCMFFlags, Gadgets, CheckMark, Text, Type, Screen, BitMap, MinMidth, MinHeight, MaxWidth, MaxHeight Before you call OperWindow(), you must initialize an instance of a NewWindow structure. NewWindow is a structure that contains all of the arguments needed to open a Window. The NewWindow structure may be discarded immediately after it is used to open If Type == CUSTOMSCREEN, you must have opened your own Screen structure is initialized with the following data: NewWindow = pointer to an instance of a NewWindow structure. where the NewWindow structure is initialized with: Left = the initial x-position for your window Top = the initial y-position for your window Width = the initial width of this window Opens an Intuition Window everything you need to get going. OpenWindow (NewWindow); ; your own BitMap. OpenWindow the Window. OpenWindow SYNOPSIS

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WINDOWSIZING allows this Window to be sized. If you ask the WINDOWSIZING Cadget, you must specify one or both of the flags SIZEBRICHT and SIZEBBOTTOM below; if you don't, the default is SIZEBRICHT. See the following items SIZEBRICHT and SIZEBBOTICM for extra SIZEBRIGHT is a special system Gadget flag that information.

horizontal bit and are willing to lose lines vertically. NOTE: if you select WINDOWSIZING, you must select either SIZEBRIGHT or SIZEBBOTIOM or both. If you select will take up the slack. This will be particularly useful to applications that want to use the extra space for other Gadgets (like a Proportional Gadget and two you set to specify whether or not you want the RIGHT Border adjusted to account for the physical size all, take up room in either the right or bottom border (or both, if you like) of the Window. Setting either this or the SIZEBBOTIOM flag selects which edge The Sizing Gadget must, after for instance, applications that want every possible Booleans done up to look like scroll bars) or, for of the Sizing Gadget.

you set to specify whether or not you want the BOTICM Border adjusted to account for the physical size neither, the default is SIZERRIGHT. SIZEBBOTIOM is a special system Gadget flag that of the Sizing Gadget. For details, refer to

either SIZEBRIGHT or SIZEBBOTTOM or both. If you select if you select WINDOWSIZING, you must select SIZEBRICHT above.

- GIMMEZEROZERO for easy but expensive output neither, the default is SIZEBRICHT.

what type of window raster you want, either:

- SIMPLE REFRESH

SMART REFRESH

SUPER BITMAP

BACKDROP for whether or not you want this window to be one See BORDERLESS of Intuition's special backdrop windows.

The mouse move reports (either InputEvents or messages on the IDCMP) that you get will have the x/y coordinates of the After you've opened your Window, if you want to change you can later change the status of this via a call to ReportMouse(). Whether or not your Window is listening to current mouse position, relative to the upper-left corner of your Window (GIMMEZEROZERO notwithstanding). mouse movement events whenever your Window is the active REPORTMOUSE for whether or not you want to "listen" to Mouse is affected by Cadgets too, since they can cause you to start getting reports too if you like. flag can work in conjunction with the IDOMP Flag called MOUSEMOVE, which allows you to listen via the

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This is a good way to take over the entire Screen, since you can have a Window cover the entire width of the Screen using Window borders are the only dependable visual division between various Windows and the background Screen. Taking away that Border takes away that visual cue, so make sure this flag. This will work particularly well in conjunction with the BACKOROF flag (see above), since it allows you to open a Window that fills the ENTIRE Screen. NOTE: this is not a flag that you want to set casually, since it may cause visual confusion on the Screen. The that your design doesn't need it at all before you spacing that comes with typical Windows.

would have the effect of yanking the imput rug from under the user). Please use this flag thoughtfully and doing something with another Screen, for instance, your new Window will change where the imput is going, which The active Window is the one that receives imput from the keyboard and mouse. It's usually a good idea to first starts up be an ACTIVATED one, but all others opened later not be ACTIVATED (if the user is off to have the Window you open when your application Window to automatically become the active Window. ACTIVATE is the flag you set if you want this carefully.

and fashioned especially cryptic and unpronounceable to make them squirm with sardonic delight. Here's to you, my chums. Meanwhile, I still opt (and argue) for simplicity and elegance. all hack-heads who love to mangle our brains with maniacal names, RMBIRAP, when set, causes the right mouse button events to be trapped and broadcast as events. You can receive IDCMPFlags = IDCMP is the acronym for Intuition Direct Communications Message Port. It's Intuition's sole acronym, given in honor of these events through either the IDOP or the Console.

a pair of messageports and use them for direct communications with the Task opening this Window (as compared with broadcasting information via the Console Device). See the "Imput and Output If any of the IDOMP Flags is selected, Intuition will create Methods" chapter of this book for complete details.

of that event through the IDCMP rather than via the Console device. You request an IDCMP by setting any of these flags. Except for the special VERIFY flags, every other flag you set This allows a program to interface with Intuition program wants to know about, I'm to broadcast the details directly, rather than going through the Console device. tells me that if a given event occurs which your device.

about a certain set of events (for instance, CLOSEWINDOW); another example would be SIZEVERIFY, which is a function that you get ONLY through the use of the IDCMP (because the Console doesn't give you any way to talk to Intuition directly). for special performance cases; that is, when you aren't going to open a Console for your Window and you do want to learn messages via the Console. Reserve your usage of the IDCMP a Console, it will be far better to get most of the event Remember, if you are going to open both an IDCMP and

Border padding. Your Window may have the Border variables set anyway, depending on what Cadgetry you've requested for the Window, but you won't get the standard border lines and

BORDERLESS should be set if you want a Window with no

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zero, no IDCMP is created and the only way you can learn about any Window event for this Window is via a Console opened for this Window. And you have no way to SIZEVERIFY.

If you want to change the state of the IDCMP some time after you've opened the Window (including opening or closing the IDCMP) you call the routine ModifyIDCMP().

The flags you can set are:

it's safe for you to start output again (presuming you're want to make sure that your graphical state is quiescent before something extraordinary happens. In this case, the extraordinary event is that a rectangle of the user is allowed to bring up the DMR equest you've set Set this flag to ask for that verification step. MENUVERIEY (see immediately below), specifies that you graphical data is about to be blasted into your Window. user. Set this flag to ask for that verilleation stay. REQCLEAR is the flag you set to hear about it when the up, and the same for when system has a request for the If you're drawing into that Window, you probably will REQVERIFY is the flag which, like SIZEVERIFY and (see wish to make sure that you've ceased drawing before last Requester is cleared from your Window and using REQVERIEY)

distinct from REQVERIFY. This functions merely tells you that a Requester has opened, whereas REQVERIFY requires and wait for you to finish all graphical output to your Window before rendering the menus. Menus are currently Window which depends on a knowledge of the current size SIZEVERIFY means that you will be doing output to your that User will WAIT until you reply, which suffers the great negative potential of User-Unfriendliness. So you to respond before the Requester is opened. MENUVERIEY is the flag you set to have Intuition stop remember: use this flag sparingly, and, as always with any IDCMP Message you receive, Reply to it promptly! Then, after User has sized the Window, you RECENT is a flag that you set to receive a broadcast when the first Requester is opened in your Window. Compare this with REQCIEAR above. This function is output completes before the sizing takes place (critical Text, for instance). If this is the case, set this flag. Then, when the user wants to size, Intuition will send you the SIZEVERIFY message and Wait() until you reply that it's OK to proceed with Window, you may want to make sure that any queued involves interrupting output to all Windows in the Screen before the Menus are drawn. If you need to the sizing. NOTE: when I say that Intuition will Wait() until you reply, what I'm really saying is finish your graphical output before this happens, rendered in the most memory-efficient way, which of the Window. If the user wants to resize the you can set this flag to make sure that you do.

NEWSIZE is the flag that tells Intuition to send an IDCMP Message to you after the user has resized your Window. At this point, you could examine the size variables can find out about it using NEWSIZE

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in your Window structure to discover the new size of the Window

whenever your Window needs refreshing. This flag makes sense only with SIMPLE_REFRESH and SWART_REFRESH Windows. REFRESHWINDOW when set will cause a Message to be sent MOUSEBUTTONS will get reports about Mouse-button

Up/Down events broadcast to you (Note: only the the user clicks the Select button over a Gadget, Intuition deals with it and you don't find out ones that don't mean something to Intuition.

flag FOLLOWNOUSE set. Then all mouse movements will be REPORTMOUSE above, or if one of your Gadgets has the MOUSEMOVE will work only if you've set the flag about it through here). recorted here.

you've created with the GADCIMEDIATE flag set, the fact CAUCETDOWN means that when the User "selects" a Cadget will be broadcast through the IDCMP.

GADCETUP means that when the User "releases" a Cadget that you've created with the RELVERIEY flag set, the fact

MENUPICK selects that MenuNumber data will come this way CLOSEWINDOW means broadcast the CLOSEWINDOW event through will be broadcast through the IDCMP.

mouse. Of course, in exchange you lose all of the Console features, most notably the "cooking" of input data and RAWKEY selects that all RAWKEY events are transmitted via open a Console Device to get input from the keyboard and the IDCMP. Note that these are absolutely RAW keycodes, which you will have to massage before using. Setting t and the MOUSE flags effectively eliminates the need to the IDCAP rather than the Console

the systematic output of text to your Window. Gadgets = the pointer to the first of a linked list of the your own Can be NULL Gadgets which you want attached to this Window.

1f you have no Gadgets of your own

CheckMark = a pointer to an instance of the struct Image where can be found the imagery you want used when any of your MenuItems is to be checkmarked. If you don't want to supply your own imagery and you want to just use Intuition's own checkmark, set this argument to NULL

your window (may be null if you want no text) the Screen type for this window. If this equal CUSTOMSCREEN, you must have already opened a CUSTOMSCREEN (see text above). = a null-terminated line of text to appear on the title bar of Type = Text

Types available include: WBENCHSCREEN

CUSTOMSCREEN

Screen = if your type is one of Intuition's Standard Screens, then this argument is ignored. However, if Type == CUSTONSCREEN, this must point to the structure of your own Screen BitMap = if you have specified SUPER BITMAP as the type of raster you want for this Window, then this value points to a instance of the struct BitMap. However, if the raster type is NOT SUPER BITMAP, this pointer is ignored MinWidth, MaxWidth, MaxWidth, MaxWidth, a the size limits for this Window. These must be reasonable values, which is to say

| | | | | | | | | | | | | | | | | | | SEE ALSO None | | None | | FALSE if anything went wrong and the WorkBench Screen isn't out there | RESULT TOTE 16 the Madeboark Connect amount and an area of south and a | | INPUTS None | return value if you want | Even though this routine does return a BOOL value, you can ignore the | - general good stuff and nice things, and then return IXUE - find that something has gone wrong, and return FALSE | FUNCTION This routine attempts to reopen the WorkBench. The actions taken are: | and America | SYNOPSIS BOOL OpenMorkBench (); | Uperiworkbench Uperis Live Workbench Screen | | OpenWorkBench | | | 3 17:04 1985 intuition.doc Page 52 | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---------------|--|------|--|---|---|--|----------------|--------------------------|---|--|--|-------------|------------------------------------|---|--|---------------|--|--|------------------------------------|--|
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---------------|--|------|--|---|---|--|----------------|--------------------------|---|--|--|-------------|------------------------------------|---|--|---------------|--|--|------------------------------------|--|

PrintIText Prints the IntuiText into the specified RastPort. Sets up the RastPort as specified by the IntuiText values, then prints the text into the RastPort at the IntuiText x/y coordinates offset by the left/top This routine does intuition window clipping as appropriate -- if you print text outside of your Window, your characters will be clipped at the Window's edge. -- prints the text according to the IntuiText argument If the NextText field of the IntuiText argument is non-zero, the next IntuiText is rendered as well (return to the top of this FUNCTION section for details). RastPort = the RastPort destination of the text IText = pointer to an instance of the structure IntuiText LeftEdge = left offset of the IntuiText into the RastPort TopEdge = top offset of the IntuiText into the RastPort PrintIText (RastPort, IText, LeftEdge, TopEdge) Dec 3 17:04 1985 intuition.doc Page 53 PrintIText argments. PrintI Text SYNOPSIS FUNCTION (BUCS None SEE ALSO RESULT None

| | Dec 3 17:04 1985 intuition.doc Page 54 |
|---|---|
| | RefreshGadgets |
| | NAME RefreshGadgets Refresh (redraw) the Gadget display |
| | SYNOPSIS RefreshGadgets (Gadgets, Pointer, Requester); |
| | FUNCTION Refreshes (redraws) all of the Cadgets in the Cadget List starting from the specified Cadget. |
| | The Pointer argument can point to either a Window or a Screen structure. Which it actually points to is decided by examining the SCRCADGEI flag in the first Gadget of the list; if the flag is set, then Pointer points to a Screen structure, else it points to a Window structure. |
| | The Requester variable can point to a Requester structure. If the first Cadget in the list has the REQCADCET flag set, the Cadget list refers to Cadgets in a Requester and the Pointer must necessarily point to a Window. If these are not the Cadgets of a Requester, the Requester argument may be NULL. |
| | The two main reasons why you might want to use this routine are: first, that you've modified the imagery of the Cadgets in your display and you want the new imagery to be displayed; secondly, if you think that some graphic operation you just performed trashed the Cadgetry of your display, this routine will refresh the imagery for you. |
| | The Gadgets argument can be a copy of the FirstGadget variable in either the Screen or Window structure that you want refreshed: the effect of this will be that all Gadgets will be redrawn. However, you can selectively refresh just some of the Gadgets by starting the refresh part-way into the list: for instance, redrawing your Window non-GIMWEZEROZERO Gadgets only, which you've conveniently grouped at the end of your Gadget list. |
| · | NOTE: It's never safe to tinker with the Gadget list yourself. Don't supply some Gadget list that Intuition hasn't already processed in the usual way. |
| | NOTE: If you have specified that this is the Gadget list of a Requester, that Requester must be currently displayed |
| | INPUTS Cadgets = pointer to the first in the list of Cadgets wanting refreshment Cadgets = pointer to either a Screen or Window structure (defined by the Pointer = pointer to either first Cadget (see next)) Requester = pointer to a Requester (may by NULL if this isn't a Requester Cadget list) |
| | RESULT None |

| Dec 3 17:04 1985 intuition.doc Page 56 | |
|---|--|
| RemakeoDisplay | |
| lay Remaise the entire Intuition display | |
| SYNOPSIS RemakeDisplay(); | |
| FUNCTION This is the big one. | |
| This procedure remakes the entire Intuition display. It calls MakeScreen() for every Screen in the system, and then it calls RethinkDisplay() which rethinks the relationships of the Screens to one another and then rethinks the display copper lists. | |
| WARNING: This routine can take several milliseconds to run, so do not use it lightly. RethinkDisplay() (called by this routine) does a Forbid() on entry and a Permit() on exit, which can seriously degrade the performance of the multi-tasking Eaxecutive. | |
| INPUTS None | |
| RESULT None | |
| BUCS None | |
| SEE ALSO RethinkDisplay() The graphics library's MakeScreen() | |
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RemoveGadget Pointer = pointer to the Window or Screen from which the Cadget is to be removed. the Cadget's SCRCADCET flag describes whether this is a pointer to a Window or a Screen Gadget = pointer to the Cadget to be removed. The Cadget itself describes whether this is a Cadget that should be removed from the Window Removes the given Cadget from the Cadget list of the specified
Nindow or Screen. Returns the ordinal position of the removed
Mindow or Screen. Returns the ordinal position of the removed
Cadget. If the Cadget's SCRCANCET flag is set, the Pointer variable is
regarded as a pointer to a Screen; also, it's regarded as a pointer to
a Window. If the Cadget pointer points to a Cadget that isn't in the
appropriate list, -1 is returned. If there aren't any Cadgets in the
list, -1 is returned. If you remove the 65535th Cadget from the list
-1 is returned. Returns the ordinal position of the removed Cadget. If the Cadget wasn't found in the appropriate list, or if there are no Gadgets in the list, returns -1 removes a Cadget from a Window or a Screen Dec 3 17:04 1985 intuition.doc Page 57 SYNOPSIS USHORI RemoveGadget (Pointer, Gadget); or the Screen RemoveGedget RemoveGadget SEE ALSO AddCadget None RESULT INPUTS Z BUCS A-181

| Dec 3 17:04 1985 intuition.doc Page 58 | |
|--|---------------------------|
| ReportMouse | ReportMouse |
| NAME ReportMouse tells Intuition whether or not to report mouse movement | ovement |
| SYNOPSIS ReportMouse(Window, Boolean); | |
| FUNCTION Talls Intuition whether or not to broadcast mouse-movement events to this Window when it's the active one. The Boolean value specifies whether to start or stop broadcasting position information of mouse-movement. If the Window is the active one, mouse-movement reports start coming immediately afterwards. This same routine will change the current state of the FOLLOWNONSE function of a currently-selected Gadget too. Note that calling ReportMouse() when a Gadget is selected while the Gadget is selected; the next time the Cadget is selected, its FOLLOWNONSE flag is examined anew. Note also that calling ReportMouse() when no Gadget is currently selected will change the state of the Window's REPORTWONSE is currently selected will change the state of the Window's REPORTWONSE is not also but | to s reports ge mouse but |
| The ReportMouse() function is first performed when OpenWindow() is first called; if the flag REPORIMOUSE is included among the options, then all mouse-movement events are reported to the opening task and will continue to be reported until ReportMouse() is called with a Boolean value of FALSE. If REPORIMOUSE is not set, then no mouse-movement reports will be broadcast until ReportMouse() is called with a Boolean of IRUE. | |
| INPUTS Window = pointer to a Window structure associated with this request Boolean = TRUE or FALSE value specifying whether to turn this function on or off | st |
| RESULT None | |
| BUCS None | |
| SEF ALSO None | |
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| Mequent Request Activates a Requester SWEPSIS Request (Requester, Windov); FUNCTION Links in and displays a Requester into the specified Windov. This routine ignores the Windov's REQVERIFY flag. INCUTS Requester = pointer to the Requester to be displayed Window = pointer to the Windov into which this Requester goes RESULT If the Requester is successfully opened, RMSE is returned. BUCS None SEE ALSO None | NAME Request Activates a Requester SYNCPSIS Request (Requester, Window); FUNCTION Links in and displays a Requester into the This routine ignores the Window's REQVERIE) | |
|--|--|----------------------------------|
| set Activates a Requester set (Requester, Window); In and displays a Requester into the specified Window routine ignores the Window's REQVERIFY flag. ster = pointer to the Requester to be displayed w = pointer to the Window into which this Requester gos Requester is successfully opened, TRUE is returned. Requester could not be opened, FALSE is returned. | NAME Request Activates a Requester SYNOPSIS Request(Requester, Window); FUNCTION Links in and displays a Requester into the This routine ignores the Window's REQVERIE) | Request |
| set (Requester, Window): In and displays a Requester into the specified Window routine ignores the Window's REQVERIFY flag. ster = pointer to the Requester to be displayed w = pointer to the Mindow into which this Requester good Requester is successfully opened, TRUE is returned. Bequester could not be opened, FALSE is returned. | SYNOPSIS Request (Requester, Window); FUNCTION Links in and displays a Requester into the This routine ignores the Window's REQVERIE) | |
| In and displays a Requester into the specified Window routine ignores the Window's REQVERIFY flag. ster = pointer to the Requester to be displayed w = pointer to the Window into which this Requester gos Bequester is successfully opened, TRUE is returned. Bequester could not be opened, FALSE is returned. | FUNCTION Links in and displays a Requester into the This routine ignores the Window's REQVERIEN | |
| routine ignores the Window's REQVERIFY flag. ster = pointer to the Mindow into which this Requester gos Bequester is successfully opened, TRUE is returned. Requester could not be opened, FALSE is returned. | This routine ignores the Window's REQVERIES | specified Window. |
| ster = pointer to the Requester to be displayed w = pointer to the Window into which this Requester god B. Requester is successfully opened, TRUE is returned. B. Requester could not be opened, FALSE is returned. | | flag. |
| Bequester is successfully opened, TRUE is returned. Requester could not be opened, FALSE is returned. | INPUTS Requester = pointer to the Requester to be Window = pointer to the Window into which t | ilisplayed nis Requester goes |
| Mone None None None None | RESULT If the Requester is successfully opened, TR if the Requester could not be opened, FALSE | |
| None None | BUCS None | |
| | SEE ALSO None | |
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| NAME RethinkDisplay the grand manipulator of the entire Intuition display |
|---|
| SYNOPSIS Rethindoisplay(); |
| FUNCTION This function performs the Intuition global display reconstruction. This includes: massaging internal state data, rethinking about all of the ViewPorts and their relationship to one another, and, finally, reconstructing the entire display based on the results of all this rethinking. |
| The reconstruction of the display includes calls to the graphics library to perform MrgCop() and LoadView() for all of Intuition's Screens. |
| You may perform a MakeScreen() on your Custom Screen before calling this routine. The results will be incorporated in the new display. |
| WARNING: This routine can take several milliseconds to run, so do not use it lightly. RethinOisplay() does a Forbid() on entry and a Permit() on exit, which can seriously degrade the performance of the multi-tasking Eexecutive. |
| INPUTS None |
| RESULT None |
| BUCS None |

SEE ALSO RemakeDisplay() The graphics library's MakeVPort(), MrgCop(), and LoadView()

RethindDisplay

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Rethindisplay

| 1985 intuition.doc Page 61 | ScreenToBack E ScreenToBack send the specified Screen to the back of the display | IOPSIS ScreenToBack (Screen) ; | FUNCTION Sends the specified Screen to the back of the display | UTS Screen = pointer to a Screen structure | LT one | OTIO | ALSO One | | | | | | |
|----------------------------|---|-----------------------------------|---|---|----------------|------|------------------|--|------|--|------|--|--|
| Dec 3 17:0 | ScreenfoBack NAME ScreenfoBa | SYNOPSIS ScreenTol | FUNCTION Sends the | INPUTS Screen = | RESULT None | BUCS | SEE ALSO None | | | | | | |

| | Dec 3 17:04 1985 intuition.doc Page 63 | Dec 3 17:04 1985 intuition.doc Page 64 |
|--------|--|--|
| | SetDiffequest | SetMenuStrip |
| | NAME SetDME equest sets the DME equest of the Window | NAME SetMenuStrip Attaches the Menu stri |
| | SYNCPSIS SetD#Request (Window, DPRequester); | Wand. |
| | FUNCTION Attempts to set the DWBequester into the specified window. The DWBequester is the special Requester that you attach to the double-click of the manu button which the user can then bring up on demand. This routine WILL NOT set the DWBeamseter | FUNCTION Attaches the Menu strip to the Window. If the user presses the menu button, thi will be displayed and accessible. |
| | If it's already set and is currently active (in use by the user). After having called SetDMSequest(), if you want to change the DMSequester, the correct way to start is by calling ClearDMSequest() until it returns a value of TRUE; then you can call SetDMSequest() with the new DMSequester. | NOTE: You should always design your Men two-way operation, where for every Menu Window you should always plan to clear the lifetime of your Window you will have the lifetime of your Window you will have |
| | INPUTS Window = pointer to the window from which the DMRequest is to be set DMRequester = a pointer to a Requester | before closing the Window. Jou and the to this Window, the correct procedure for strip involves calling ClearMenuStrip() The sequence of events should be. |
| -184 - | RESULT If the current DMRequest was not in use, sets the DMRequest pointer into the Window and returns TRUE. If the DMRequest was currently in use, doesn't change the pointer and returns FALSE | - OpenWindow() - zero or more iterations of: - SetMenuStrip() - ClearMenuStrip() - CloseWindow() |
| | BUCS None | INPUTS Window = pointer to a Window structure Menu = pointer to the first Menu in the P |
| | SEE ALSO ClearD#Request() Request() | RESULT None |
| | | BUCS None |
| | | SEE ALSO ClearMenuStrip() |
| | | |
| | | |
| | | |

| SetMenuStrip | SetMenuStrip |
|---|---|
| NAME SetMenuStrip Attach | Attaches the Menu strip to the Window |
| SYNOPSIS SetMenuStrip (Window, Menu); | (n) ; |
| FUNCTION Attaches the Menu strip to the Window. if the user presses the menu button, the will be displayed and accessible. | to the Window. After calling this routine, menu button, this specified menu strip cessible. |
| NOTE: You should always design two-way operation, where for even window you should always plan to in the simplest case, where you the lifetime of your Window, you before closing the Window. If y to this Window, the correct procestrip involves calling clearWenu The sequence of events should be - OpenWindow () - Zero or more iterations of: - SetMenuStrip() - ClearMenuStrip() - ClearMenuStrip() | NOTE: You should always design your Menu strip changes to be a two-way operation, where for every Menu strip you add to your Window you should always plan to clear that strip sometime. Even in the simplest case, where you will have just one Menu strip for the lifetime of your Window, you should always clear the Menu strip before closing the Window, if you already have a Menu strip attached to this Window, the correct procedure for changing to a new Menu strip involves calling ClearMenuStrip() to clear the old first. - OperWindow() - Zero or more iterations of: - GlearMenuStrip() - ClearMenuStrip() - CloseWindow() |
| INPUTS Window = pointer to a Window structure Menu = pointer to the first Menu in the | Window structure first Menu in the Menu strip |
| RESULT None | |
| BUCS None | |
| SEE ALSO ClearMenuStrip() | |
| | |
| | |

SetPointer Width = the Width of the sprite (must be less than or equal to sixteen) XOffset = the offset for your sprite from the Pointer position YOffset = the offset for your sprite from the Pointer position of the hardware sprite imagery from what intuition regards as the current position of the Pointer. Another way of describing it is as the offset from the "not spot" of the Pointer to the top-left corner of the sprite. For instance, if you specify offsets of zero, zero, then the top-left corner of your sprite image will be placed at the Pointer position. On the other hand, if you specify an NOffset of 7 (remember, sprites are is pixels wide) then your sprite will be centered over the Pointer position. If you specify an NOffset of -15, the right-edge of the sprite will be over the Pointer position. Window = pointer to the Window to receive this Pointer definition Sets up the Window with the sprite definition for the Pointer. Then whenever the Window is the active one, the Pointer image will change to its version of the Pointer. If the Window is the active one when this routine is called, the change takes place immediately. The XOffset and YOffset are used to offset the top-left corner SetPointer (Window, Pointer, Height, Width, XOffset, YOffset); Pointer = pointer to the data definition of a Sprite Height = the height of the Pointer sets a Window with its own Pointer Dec 3 17:04 1985 intuition.doc Page 65 ClearPointer () SetPointer SetPointer FUNCTION SEE ALSO None RESULT

| SetWindowTitles SetW | SetWindowTitles |
|--|-----------------|
| NAME SetWindowTitles Sets the Window's titles for both Window and Screen | ind Screen |
| SYNOPSIS SetWindowIitles(Window, WindowTitle, ScreenTitle); | |
| FUNCTION Allows you to set the text which appears in the Window and/or Screen title bars. | Screen |
| The Window Title appears at all times along the Window Title Bar. The Window's Screen Title appears at the Screen Title Bar whenever this Screen is the active one. | ar . ever |
| When this routine is called, your Window Title will be changed immediately. If your Window is the active one when this routine called, the Screen Title will be changed immediately. | e is |
| You can specify a value of -1 (negative one) for either of the title pointers. This designates that you want to Intuition to leave the current setting of that particular title alone, and modify only the other one. Of course, you could set both to -1. | title |
| Furthermore, you can set a value of 0 (zero) for either of the title pointers. Doing so specifies that you want no title to appear (the title bar will be blank). | |
| INPUTS Window = pointer to your Window structure WindowTitle = pointer to a null-terminated text string, or set to either the value of -1 (negative one) or 0 (zero) ScreenTitle = pointer to a null-terminated text string, or set to either the value of -1 (negative one) or 0 (zero) | \$ \$ - |
| RESULT None | |
| BUCS None | |
| SEE ALSO OpenWindow() | |
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| Smortitio WWE Sizawinn SMORTIS Shortition SMORTIS Shortition SMORTIS Shortition SMORTIS Shortition SMORTIS Shortition SMORTIS Shortition The rotten eats the Streen title bar deplay mode Sizawinn SMORTIS Shortition The rottine eats the STATILIZ flag of the specified Screen, and The rottine eats the STATILIZ flag of the Screen and its Windows. The screen title bar can appear either in front of or balled Buckson Allows a part of the Screen Title Bar to be all in front of or balled the Screen's Storen Title Bar to be lain front of or balled the Screen's Storen Title Bar to be lain front of or balled the Screen's Storen Title Bar vill be rotted at the more BACKSON WWE Storen's Storen Title Bar vill be reduced balled the If EASS. If TRUE, If EAS | | Dec 3 17:04 1985 intuition.doc Page 67 | <u> </u> | Dec 3 17: |
|--|-------------|--|--|---|
| NAME STANDARY SMORTILIE Set the Screen title bar display mode STANDARY SMORTILIE (Screen, Shoult); FUNDARY Bits routine sets the SEMITILE flag of the specified Screen, and the routine sets the SEMITILE flag of the Screen and its Windows. This screen the last can appear either in front of or behind BACKRORY Windows. This is so creen fittle bar. You specify Whitdows you want thus screen fittle bar. You specify Whitdows you want the Screen fittle bar in front of backrow white screen's fittle bar will be store to either TRUE or FALSE. If TRUE, the SCREEN'S WINDOWS. The SCREEN'S TILLS bar will be remarked behind all Windows. If EALSE, the Title bar will be shown in front of BACKRORY Windows. If EALSE, the Title bar will be remarked behind all Windows. INFOURS Screen is first opened, the default setting of the SEWITILE SCREEN = pointer to a Screen structure SCREEN SC | | | SI | LzeWindow |
| STANCESIS ShowIttle (Screen, ShowIt); FUNCTION Bust routine sets the SEAMITLE flag of the specified Screen, and the routine sets the SEAMITLE flag of the Screen and its Mindows. This routine bar can appear either in front of the Debind BOCOROR Mindows. This is contrasted with the fact that non-BOCOROR Mindows always appear in front of the Screen Title Bar. Vow specify whether you want the Screen Title Bar to be in front of or behind the Screen's BACOROR Mindows by calling this routine. The Screen's Title Bar will be shown in front of BACOROR Mindows. If FALSE, the Title Bar will be rendered behind all Mindows. If FALSE, the Title Bar will be rendered behind all Mindows. If FALSE, the Title Bar will be rendered behind all Mindows. INEWERS Screen = pointer to a Screen structure Screen = pointer to a Screen structure Screen = pointer to a Screen structure Screen = boolean TRUE or FALSE describing whether to show or hide the BESULT Mone BUGS Wone SEE MISSO Wone MONE WONE WONE | | howTitle | <u> </u> | WE StzeWin |
| FUNCTION This routine sets the SEMMIILE flag of the specified Screen, and then coordinates the redisplay of the Screen and its Mindows. The Screen title bur can appear either in front of or bahind BACKBOP Mindows. This is contrasted with the fact that non-backBOCKBOP Mindows always appear in front of the Screen title Bur to be in front of or bahind the Screen's EMCREOP Mindows by calling this routine. The Showit argument abound be set to either RUE or FALSE. If RUE, the Screen's Title Bur vill be shown in front of BACKBOP Windows. If FALSE, the Title Bur vill be rendered behind all Mindows. When a Screen's Title Bur vill be rendered behind all Mindows. When a Screen's Title Bur vill be rendered behind all Mindows. When a Screen's Title Bur vill be rendered behind all Mindows. When a Screen's Title Bur vill be rendered behind all Mindows. When a Screen is first opened, the default setting of the SHOWITLE Flag is RUE. BESULT Wone Screen Title Bur BECS Mone SEE ALSO Mone SEE AL | | SYNCPSIS ShowIttle(Screen, ShowIt); | 24 | NOPSIS Stzewin |
| Windows. This is contrasted with the fact that non-RACIREP Windows Always appear in front of the Screen Title Bar. You specify whether you want the Screen Title Bar to be in front of or behind the Screen's BACIREP Windows by calling this routine. The Stown't argument abouid be set to either RUE or FAISE. If RUE, the Screen's Title Bar will be shown in front of BACIREP Windows. If FAISE, the Title Bar will be rendered behind all Windows. Man a Screen is first opened, the default setting of the SHOWITHE flag is RUE. INPUTS Screen = pointer to a Screen structure Screen = pointer to a Screen structure Screen = pointer to a Screen structure Screen = Itile Bar RESULT None BUCS Wore SEE ALSO None SEE ALSO Wore SEE ALSO Wore SEE ALSO Wore SEE ALSO Wore SEE ALSO Whome | | FUNCTION This routine sets the SHOWITLE flag of the specified Screen, and then coordinates the redisplay of the Screen and its Windows. | FU | NCTION This routhe spec |
| The Showit argument should be set to either TRUE or FALSE. If TRUE, the Screen's Title Bar will be shown in front of BACKERP Windows. If FALSE, the Title Bar will be rendered behind all Windows. When a Screen is first opened, the default setting of the SHOWITHE flag is TRUE. INPUTS Screen = pointer to a Screen structure Showit = Boolean TRUE or FALSE describing whether to show or hide the Screen Title Bar RESULT None SEE ALSO Whene SEE ALSO | | The Screen title bar can appear either in front of or behind BACKOROP Windows Windows. This is contrasted with the fact that non-BACKOROP Windows always appear in front of the Screen Title Bar. You specify whether you want the Screen Title Bar to be in front of or behind the Screen's BACKOROP Windows by calling this routine. | | size the Note tha will be which ha and a ma |
| When a Screen is first opened, the default setting of the SEWITHE flag is TRUE. INFUTS Screen = pointer to a Screen structure Showit = Boolean TRUE or FALSE describing whether to show or hide the Screen Title Bar RESULT None BUCS None SEE ALSO NONE SEE | - A | The Showit argument should be set to either TRUE or FALSE. If TRUE, the Screen's Title Bar will be shown in front of BACKOROP Windows. If FALSE, the Title Bar will be rendered behind all Windows. | | you Wind of the I chapter |
| Screen = pointer to a Screen structure Screen = pointer to a Screen structure Screen Title Bar RESULT None BUCS None SEE ALSO None None None None None None None None | A-18 | When a Screen is first opened, the default setting of the SHOWITILE flag is IRUE. | | This rou Some far |
| Window DeltaX DeltaX DeltaX DeltaX DeltaX DeltaX None BUCS None SEE ALSO MoveWin | 16 – | INPUTS Screen = pointer to a Screen structure Showit = Boolean TRUE or FALSE describing whether to show or hide the Screen litle Bar | ex i | distorti as predi a pretty |
| SER BUCKER | | RESULT None | | dov aX |
| | | BUCS None | RES | ULT None |
| MoveWindo | | SEE ALSO None | SON TO THE STATE OF THE STATE O | S None |
| | | | | ALSO MoveMIndo |

| Dec 3 17:04 1985 Intuition.doc Page 68 | |
|--|--|
| SizeWindow | |
| NAME SizeWindow Ask Intuition to size a Window | |
| SYNOPSIS SizeWindow(Window, DeltaX, DeltaX); | |
| FUNCTION This routine sends a request to Intuition asking to size the Window the specified amounts. The delta arguments describe how much to size the Window along the respective axes. | |
| Note that the Window will not be sized immediately, but rather will be sized the next time Intuition receives an input event, which happens currently at a minimum rate of ten times per second, and a maximum of sixty times a second. You can discover when you Window has finally been sized by setting the NEWSIZE flag of the IDCMP of your Window. See the "Input and Output Methods" chapter of this book for description of the IDCMP. | |
| This routine does no error-checking. If your delta values specify some far corner of the Universe, Intuition will attempt to size your Window to the far corners of the Universe. Because of the distortions in the space-time continuum that can result from this, as predicted by special relativity, the result is generally not a pretty sight. | |
| INPUTS Window = pointer to the structure of the Window to be sized DeltaX = signed value describing how much to size the Window on the x-axis DeltaY = signed value describing how much to size the Window on the y-axis RESULT None | |
| BUCS None | |
| SEE ALSO MoveWindow(), WindowToFront(), WindowToBack() | |
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| With Ministers of the Intuition View structure STOROGYSS STOROGYS STOROGYS STOROGYSS STOROGYSS STOROGYSS STOROGYS STOROGYSS STOROGYS STOROGY STOROGY STOROGY STOROGY STOROGY STOROGY STOROGY STOROGY | Dec 3 17:04 1985 intuition.doc Page 69 | Dec 3 17:04 1985 intuition.doc Page 70 |
|--|--|---|
| Signature the address of the Intuition View structure Signature (Mind of Mind | | ViewPortAddness |
| Single (analysis of the intuition View structure. If you not to use any of the graphics, text, or animation primitives by your Mindow and that primitions a pointer to a View, by View for you. So the fortuin will return the address of the View for you. So the structure of the intuition View structure and the paraphics, text, and animation primitives I.SO I of the graphics, text, and animation primitives So the graphics text, and animation primitives | ewAddress | LewPortAddress |
| FUN turns the address of the Intuition View structure. If you nt to use any of the graphics, text, or animation primitives in your Window and that primitive requires a pointer to a View, its routine will return the address of the View for you. If the graphics of the Intuition View structure and he hard for this routine to have a bug LSO 1 of the graphics, text, and animation primitives SEE 1 of the graphics text, and animation primitives | SYNOPSIS ViewAddress (); | SYNOPSIS ViewPortAddress (Window); |
| furns the address of the Intuition View structure ald be hard for this routine to have a bug LSO LSO Lof the graphics, text, and animation primitives SEE SEE SEE SEE SEE SEE SEE S | FUNCTION Returns the address of the Intuition View structure. If you want to use any of the graphics, text, or animation primitives in your Window and that primitive requires a pointer to a View, this routine will return the address of the View for you. | EUNCTION Returns the address of the ViewPort assometime Window. The ViewPort is actually the View the Window is displayed. If you want to or animation primitives in your Window a pointer to a ViewPort, you can use this |
| furns the address of the Intuition View structure ald be hard for this routine to have a bug LSO 1 of the graphics, text, and animation primitives SEE | INPUTS None | INPUTS Lindow = maintent to the Window for which |
| LESO I of the graphics, text, and animation primitives SEE | urns the address of | RESULT Returns the address of the Intuition Vi |
| I the graphics, text, and animation primitives | uld be hard for this | BUCS Would be hard for this routine to have |
| | SEE ALSO All of the graphics, text, and animation primitives | SEE ALSO All of the graphics, text, and animatio |
| | | · |

| NAME VisePortAddress returns the address of a Window's VisePort structure SYNDERIS VisePortAddress (Window); FUNCTION Returns the address of the VisePort associated with the specified Window. The VisePort is actually the VisePort of the Screen within which the Window is displayed. If you want to use any of the graphics, text, or animation primitives in your Window and that primitive requires a pointer to a VisePort, you can use this call. INPUTS Window = pointer to the Window for which you want the VisePort address RESULT Returns the address of the Intuition View structure BUCS Would be hard for this routine to have a bug SEE ALSO All of the graphics, text, and animation primitives | ViewPortAddress |
|---|--|
| STANCESIS VisarPortAddress (Window); VisarPortAddress (Window); EUNCTION Returns the address of the VisarPort associated with the specified Numbow. The VisarPort is actually the VisarPort of the Screen within which the Window is displayed. If you want to use any of the graphics, text, or amisstion primitives in your Window and that primitive requires a pointer to a VisarPort, you can use this call. INBUTS Window = pointer to the Window for which you want the VisarPort address RESULT Returns the address of the Intuition Visar structure BUCS Would be hard for this routine to have a bug SEE ALSO All of the graphics, text, and animation primitives | lewPortAddress |
| FUNCTION Returns the address of the ViewFort associated with the specified Mindow. The ViewFort is actually the ViewFort of the Screen within which Mindow. The ViewFort is actually the ViewFort of the graphics, text, or animation printitives in you want to use any of the graphics, text, or animation printitives in you will now and that primitive requires a pointer to a ViewFort, you can use this call. INPUTS Mindow = pointer to the Mindow for which you want the ViewFort address RESULT RESULT RESULT Would be hard for this routine to have a bug SEE ALSO All of the graphics, text, and animation primitives | SYNOPSIS ViewPortAddress (Window); |
| Mindow = pointer to the Window for which you want the ViewFort address RESULT Returns the address of the Intuition View structure BUCS Would be hard for this routine to have a bug SEE ALSO All of the graphics, text, and animation primitives | FUNCTION Returns the address of the ViewPort associated with the specified Window. The ViewPort is actually the ViewPort of the Screen within which the Window is displayed. If you want to use any of the graphics, text, or animation primitives in your Window and that primitive requires a pointer to a ViewPort, you can use this call. |
| RESULT Returns the address of the Intuition View structure BUCS Would be hard for this routine to have a bug SEE ALSO All of the graphics, text, and animation primitives | IMPUTS Window = pointer to the Window for which you want the ViewPort address |
| Would be hard for this routine to have a bug SEE ALSO All of the graphics, text, and animation primitives | RESULT Returns the address of the Intuition View structure |
| All of the graphics, text, and animation primitives | BUCS Would be hard for this routine to have a bug |
| | SEE ALSO All of the graphics, text, and animation primitives |
| | |

| Dec 3 17:04 1985 intuition.doc Page 72 | WBenchToFront WBenchToFront | WBenchToFront Brings the WorkBench Screen in front of all Screens SYNOPSIS WBenchToFront(); | FUNCTION Causes the Workbench Screen, if it's currently opened, to come to the foreground. This does not 'move' the Screen up or down, instead only affects the depth-arrangement of the Screen. | If the WorkBench Screen was opened, this function returns TRUE, otherwise it returns FALSE. | INPUTS None | RESULT If the WorkBench Screen was opened, this function returns TRUE, otherwise it returns FALSE. | BUCS None | SEE ALSO WhenchToBack() | | | | |
|--|-----------------------------|---|---|---|-------------|---|-----------|-------------------------|--|--|--|--|
| | Front | | | 8 | | 2 | | | | | | |

| Dec 3 17:04 1985 intuition.doc Page 71 | MBench To Back WBench To Back | NAME WBenchIoBack Sends the WorkBench Screen in back of all Screens | SYNCPSIS WhenchToBack(); | FUNCTION Causes the WorkBench Screen, if it's currently opened, to go to the background. This does not 'move' the Screen up or down, instead only affects the depth-arrangement of the Screen. | If the WorkBench Screen was opened, this function returns TRUE, otherwise it returns FALSE. | INPUTS None | RESULT If the Worldbench Screen was opened, this function returns TRUE, otherwise it returns FALSE. | BUCS None | SEE ALSO WhenchToFront() | | | | : |
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WindowLimits

WindowLimits

Set the minimum and maximum limits of the Window

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WindowLimits

WindowLimits(Window, MinWidth, MinMeight, MaxWidth, MaxMeight);

Sets the minimum and maximum limits of the Window's size. Until this routine is called, the Window's size limits are equal to the Window's initial size, which means that the user won't be able to size it at all. After the call to this routine, the Window will be able to be sized to any dimensions within the specified limits. FUNCTION

If you don't want to change any one of the dimensions, set the limit argument for that dimension to zero. If any of the limit arguments is equal to zero, that argument is ignored and the initial setting of that parameter remains undisturbed

are in range. If any are out of range, the return value from this procedure will be FALSE. If all arguments are valid, the return If any of the arguments is out of range (minimums greater than the current size, maximums less than the current size), that limit will be ignored, though the others will still take effect if they value will be TRUE.

If the user is currently sizing this Window, the new limits will not take effect until after the sizing is completed.

Window = pointer to a Window structure
MinWidth, MinWeight, MaxWeight = the new limits for the size
of this Window. If any of these is set to zero, it will
be ignored and that setting will be unchanged.

RESULT

Returns TRUE if everything was in order. If any of the parameters was out of range (minimums greater than current size, maximums less than current size), FALSE is returned and the errant limit request is not fulfilled (though the valid ones will be).

BCS

None

SEE ALSO

intuition.doc Page 74 Dec 3 17:04 1985

WindowToBack

WindowToBack

-- Ask Intuition to send this Window to the back WindowToBack

SYNOPSIS

WindowToBack (Window);

FUNCTION

This routine sends a request to intuition asking to send the Window in back of all other Windows in the Screen.

Note that the Window will not be depth-arranged immediately, but rather will be arranged the next time Intuition receives an input event, which happens currently at a minimum rate of ten times per second, and a maximum of sixty times a second.

Remember that BACKOROP Windows cannot be depth-arranged

Window = pointer to the structure of the Window to be sent to the back

None

None BUGS

MoveWindow(), SizeWindow(), WindowToFront() SEE ALSO

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layers.llbrary/BeginUpdate convert damage list to ClipRect list and swap in for programmer to redraw through. This routine simulates the rom library environment. The layer is locked against changes made by the layer library. Beginüpdate -- prepare to repair damaged layer Dec 3 17:50 1985 layers.Doc Page 2 = pointer to a layer layers.h EndUpdate() layers.llbrary/BeginUpdate SYNOPSIS BeginUpdate(1) a0 SEE ALSO FUNCTION INPUTS NAME

FUNCTION SEE ALSO INPUTS NAME layers.library/BehindLayer Move this layer to the most behind position swapping bits in and out of the display with other layers. If other layers are REFRESH then collect their damage lists and set bit in Flags of those layers that may be revealed. If this layer is a backdrop layer then put this layer behind all other backdrop layers. If this layer is NOT a backdrop layer then put in front of the top backdrop layer and behind all other layers. if operation successful if operation unsuccessful (probably out of memory) -- Put layer behind other layers. = pointer to LayerInfo structure
= pointer to a layer Dec 3 17:50 1985 layers.Doc Page 3 BehindLayer (11, 1) a0 a1 layers.library/BehindLayer BehindLayer layers.h TRUE 11 SYNOPSIS FUNCTION SEE ALSO RETURNS INPUTS KAR BUGS - A-192 -

layers.llbrary/CreateBehindLayer -- Create a new layer behind all existing Make this layer of type found in flags
if SuperBittley, use bm2 as pointer to real SuperBittley.
and copy contents of Superbitmap into display layer.
If this layer is a backdrop layer then place it behind all other layers including other backdrop layers. If this is not a backdrop layer then place it behind all onthe layers including other backdrop layers. Create a new Layer of position and size (x0,y0)->(x1,y1) flags= various types of layers supported as bit sets. x0,y0= upper left hand corner of layer x1,y1= lower right hand corner of layer 11 = pointer to LayerInfo structure
bm = pointer to common BitMap used by all Layers
bm2 = pointer to optional Super BitMap [a2] CreateBehindLayer (11, bm, x0, y0, x1, y1, flags [, bm2])
a0 a1 d0 d1 d2 d3 d4 [a2 layers. Dec 3 17:50 1985 layers.Doc Page 4 layers.library/CreateBehindLayer CreateBehindLayer layers. layers.h SYNOPSIS

Dec 3 17:50 1985 layers.Doc Page 6 = pointer to a layer DeleteLayer(11, 1) a0 a1 layers.library/DeleteLayer layers.h SEE ALSO SYNOPSIS FUNCTION INPUTS layers.library/CreateUpfrontLayer -- Create a new layer on top of existing Create a new Layer of position and size $(x0,y0) \rightarrow (x1,y1)$ and place it on top of all other layers. Make this layer of type found in flags if SuperBitHap, use bm2 as pointer to real SuperBitHap. and copy contents of Superbitmap into display layer. flags= various types of layers supported as bit sets. x0,y0= upper left hand corner of layer x1,y1= lower right hand corner of layer 11 = pointer to LayerInfo structure
bm = pointer to common BitMap used by all Layers
bm2 = pointer to optional Super BitMap CreateUpfrontLayer(11,bm,x0,y0,x1,y1,f1ags[,bm2]) a0 a1 d0 d1 d2 d3 d4 [a2] layers. Dec 3 17:50 1985 layers.Doc Page 5 layers.library/CreateUpfrontLayer CreateUpfrontLayer layers.h SEE ALSO SYNOPSIS FUNCTION INPUTS MAR

layers.llbrary/DeleteLayer Remove this layer from the list of layers. Release memory associated with it. Restore other layers that may have been obscured by it. Trigger refresh in those that may need it. If this is a superbitmap make sure SuperBitHap is current. The SuperBitHap is not removed from the system but is available DeleteLayer -- delete layer from layer list. for program sans rest of layer stuff 11 = pointer to LayerInfo structure

| Dec 3 1/30 1985 layers.Doc Page 8 |
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| layers.library/Endipdate |
| NAME Endipolate remove damage list and restore state of layer to normal. |
| SYNOPSIS EndUpdate(1, flag) a0 d0 |
| INPUTS 1 = pointer to a layer flag= IRUE if update was successful. The damage list is cleared. |
| After the programmer has redrawn his picture he calls this routine to restore the ClipRects to point to his standard layer tiling. Use flage of you are only making a partial update. You may use the other region functions to clip adjust the DamageList to reflect a partial update. |
| SEE ALSO layers.h BeginUpdate() |
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| 1985 layers.Doc Page 10 | ury/InitLayers | Layers Initialize Layer_Info structure Layers(11) | = pointer to LayerInfo structure | Initialize Layer_Info structure in preparation to use other layer operations on this list of layers. Make the Layes unlocked (open). | |
|-------------------------------------|--|--|---|--|--|
| Dec 3 17:50 1985 layers.Doc Page 10 | layers.l | InitLayers Initialize Layer_Info structure SYNOPSIS InitLayers(11) a0 | INPUTS 11 = pointer to LayerInfo structure | FUNCTION Initialize Layer_Info structure in prepara other layer operations on this list of lay Make the Layes unlocked (open). SEE ALSO layers.h | |
| | layers.library/FattenLayerInfo | ayerinfo to 1.1 Layerinfo | ture | more info in the Layer_Info upportable manner requires the memory whenever most ed. To prevent unnecessary yerinfo will preallocate the liee out the layer library into an from NewLayerInfo. The LayerInfo structure. The LayerInfo structure it reeing the memory. ThinLayerInfo ayerInfo are used however. | seLayerInfo layers.h |
| Dec 3 17:50 1985 layers.Doc Page 9 | layers.llbrary/FattenLayerInfo NAME | FattenLayerInfo convert 1.0 LayerInfo to 1.1 LayerInfo SYNOPSIS FattenLayerInfo(11) a0 | IMPUTS 11 = pointer to LayerInfo structure | I.1 software on on need to have more info in the Layer_Info structure. To do this in a 1.0 supportable manner requires allocation and deallocation of the memory whenever most layer library functions are called. To prevent unnecessary allocation/deallocation FatteniayerInfo will preallocate the necessary data structures and fake out the layer library into thinking it has a LayerInfo gotten from NewiayerInfo. NewiayerInfo is the approved method for getting this structure. When a program needs to give up the LayerInfo structure it must call ThinkayerInfo before freeing the memory. ThinkayerInfo is not necessary if New/DisposeLayerInfo are used however. | NewLayerInfo ThinLayerInfo DisposeLayerInfo layers.h |

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| 17:50 1965 layers.Doc Page 11 Ilbrary/Locidayer layer to make changes to ClipBects. Locidayer lock layer to make changes to ClipBects. Locidayer (11, 1) a0 al. = pointer to LayerInfo structure = pointer to LayerInfo structure = pointer to a layer If snother task is already using this layer then wait for if to complete and then take the layer. ayers.h | |
|--|--|
| Dec 3 17:50 1985 layers layers.library/Loddayer NAME Loddayer lock 3 STROPSIS Loddayer (11, 1) a0 al INEUTS In = pointer to La I = pointer to La If another task is it to complete and SEE ALSO layers.h | |

| Dec 3 17:50 1985 layers.Doc Palayers.library/MoveLayer NAME MoveLayer Move nonback MoveLayer (11, 1, dx, dy, a0 a1 d0 d1 INPUTS II = pointer to LayerInf I = pointer to a nonback dx = delta to add to cu dy = delta to cu dy = delta to add | 1 | ars.library/MoveLayer MoveLayer Move nonbackdrop layer to new position in BitMap | ovelayer (11, a0 1 = pointer = pointer x = delta tu y = delta tu | TION Nove this layer to new position in shared BitMap. If any refresh layers become revealed, collect damage and set REFRESH bit in layer Flags. ALSO layers.h | | |
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Dec 3 17:50 1985 layers. Doc Page 13

layers.library/LockLayers

NAWE

LockLayers - lock all layers from graphics output

SUNCESS

LockLayers (11)

11 = pointer to LayerInfo structure

FUNCION

List calls LockLayerInfo

maio all layers in this layer list locked.

SEE ALSO

layers.h LockLayer() LockLayerInfo()
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| uec 3 17:50 1985 layers.Doc Page 15 | Dec 3 17:50 1985 layers.Doc Page 16 |
|---|---|
| layers.library/MoveLayerInFrontOf layers.library/MoveLayerInFrontOf | layers.library/NewLayerInfo |
| NAME MoveLayerInFrontOf Put layer in front of another layer | NAME NewLayerInfo Allocate and Initialize full Layer_Info structure |
| SYNOPSIS BOOLEAN MoveLayerInFrontOf(layertomove, target) a0 a1 | SYNOPSIS NewLayerInfo() INPUTS |
| INPUTS layertomove : layer to moved target : move layertomove infront of target | FUNCTION Allocate memory required for full lawer Info attention |
| FUNCTION Move this layer to in front of target swapping bits in and out of the display with other layers. If this is a refresh layer then collect demons list and | |
| set bit in Flags if redraw required tages list and By clearing the BACKOROP bit in the layers Flags you may bring a Backdrop layer up to the front of all other layers. | KEIURNS pointer to Layer_Info structure if successful NULL if not enough memory |
| RETURNS TRUE 1f operation successful FALSE 1f operation unsuccessful (probably out of memory) | SEE ALSO layers.h |
| SEE ALSO layers.h | |
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| NAME SizeLayer Change the size of this nonbackdrop layer. SIMCRESIS SizeLayer (11, 1, dx, dy) 11 = pointer to LayerInfo structure 1 = pointer to a nonbackdrop layer 2 |
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;

Dec 3 17:50 1985 layers.Doc Page 20 Support routine useful for those that need to do some operations not done by the layer library. Allows programmer to swap the contents of a small BitMap with a subsection of the display. This is accomplished without using extra memory. The bits in the display RastPort are exchanged with the bits in the ClipRect's BitMap. SwapBitsRastPortCLipRect -- Swap bits between common bitmap and obscured ClipRect = pointer to rastport
= pointer to cliprect to swap bits with ಕ್ಷ ಕ layers.library/SwapBitsRastPortClipRect Dec 3 17:50 1985 layers.Doc Page 19 SYNOPSIS SwapBitsRastPortClipRect(rp, a0 ይቴ FUNCTION INPUTS

layers.library/ThinLayerInfo

NAME
ThinLayerInfo -- convert 1.1 LayerInfo to 1.0 LayerInfo

SYNOPSIS
ThinLayerInfo(11)
a0

INPUTS
11 = pointer to LayerInfo structure

FUNCTION
return the extra memory needed that was allocated with
FatterLayerInfo. This is must be done prior to freeling
the Layer_Info structure itself. VI.1 software should be
using DisposeLayerInfo

SEE ALSO
layers.h
DisposeLayerInfo FatterLayerInfo

layers.llbrary/UnlockLayer When finished changing the ClipRects or whatever you were doing with this layer you must UnlockLayer it to allow the other task to proceed with it's graphic output. UnlockLayer -- unlock layer and allow graphics routines Dec 3 17:50 1985 layers.Doc Page 21 to use it. = pointer to a layer layers.library/UnlockLayer SINOPSIS UnlockLayer (1) layers.h SEE ALSO FUNCTION INPUTS - A-201 -

layers . library/UnlockLayerInfo All layer routines presently LockLayerInfo when they startup and UnlockLayerInfo as they exit. Programmers will need to use these Lock/Unlock routines if they wish to do something with the LayerStructure that is not Before doing an operation that requires the LayerInfo structure make sure that no other task is also using the LayerInfo structure. This procedure returns when the LayerInfo belongs to this task. There should be UnlockLayerInfo -- unlock the LayerInfo structure an UnlockLayerInfo for every LockLayerInfo. = pointer to LayerInfo structure supported by the layer library. Dec 3 17:50 1985 layers.Doc Page 22 layers.h UnlockLayerInfo() layers.library/UnlockLayerInfo SYNOPSIS UnlockLayerInfo(11) = SEE ALSO FUNCTION INPUTS RAG

| Dec 3 17:50 1985 layers.Doc Page 24 |
|---|
| layers.library/UpfrontLayer |
| NAME UpfrontLayer Put layer infront of all other layers. |
| SYNOPSIS BOOLEAN UpfrontLayer(11, 1) a0 a1 |
| INPUTS 11 = pointer to LayerInfo structure 1 = pointer to a nonbackdrop layer |
| FUNCTION Move this layer to the most upfront position swapping bits in and out of the display with other layers. If this is a refresh layer then collect damage list and set bit in Flags if redraw required. By clearing the BACKUROP bit in the layers Flags you may bring a Backdrop layer up to the front of all other layers. |
| RETURNS TRUE if operation successful FALSE if operation unsuccessful (probably out of memory) |
| SEE ALSO layers.h |
| |
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| |

```
Dec 3 17:50 1965 layers.Doc Page 23

layers.ilbrary/Unlockdayers layers.Doc Page 23

NAME
Unlockdayers -- unlock all layers from graphics output
Restart graphics output to layers that
have been waiting

SINGESIS
Unlockdayers(11)

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| 3 17:50 1985 layers.Doc Page 26 | | |
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| Doc 4 | <u>.</u> | |
| layers | | |
| 1985 | | |
| 17:50 | | |
| S Dec | · | |

| Dec 3 17:50 1985 layers layers library/WhichLayer NAME WhichLayer Which SYNOPSIS layer = (struct La layer = (struct La (x,y) = coordinate (x,y) = coordinate cocurs in this la layer. Return 0 1 SEE ALSO layers.h |
|---|
|---|

Appendix B

Device Summaries

This appendix contains Unix-like summaries for the commands that may be applied to ROM (or kickstart) resident devices, as well as summaries of routines in disk-loadable devices.

These documentation files are organized on a device-by-device basis. The tutorial sections of this manual give you information that shows how these device commands relate to each other and the prerequisites for calling them.

To use any of the device commands, you must first open the device. The correct calling sequence for opening each device is shown in the device tutorial chapter itself. This introduction lists the names of the current set of devices that are included with the system.

If the device is disk-resident, it gets loaded and initialized. The OpenDevice() fills in the io_Device and io_Unit fields of your I/O request block, thereby tying that request block to a specific device. When you say DoIO(IORequest), the DoIO() routine, among others, looks in the IORequest to find out which device is to be used. This prevents having to have a complete (duplicate) set of I/O transmit and control functions for each device.

The following is a list of the names of the devices currently a part of the Amiga software. All of these are to be treated as null-terminated strings, given to the **OpenDevice()** function. For example:

error = OpenDevice("keyboard.device",0,IORequest,0);

See the exec.doc summary for OpenDevice() for the meaning of the various fields of this command.

Device Names

audio.device console.device gameport.device keyboard.device parallel.device printer.device serial.device timer.device trackdisk.device

When you have finished using a device, at the end of your program, you should close it, using the CloseDevice() function as follows:

CloseDevice(IORequest);

You must also free whatever memory you may have dedicated to the device communication before your program ends. Note that you must assure that the device has responded to all of your I/O requests by returning your IORequest blocks before you attempt to close the device or deallocate the memory.

If the system is running out of memory and needs to free up space, it can check the accessors field for various devices. If you have closed the device, it decrements its accessors count. For those devices whose accessors value is zero, the system can retrieve the memory that the device had used.

Certain devices have routines associated with them, and can almost be treated as libraries. The devices that have specific interface routines are the timer device and the console device. To access these routines, you must, as with a library, provide a value to a specific Base variable name:

Device Base Address Name

timer TimerBase console ConsoleDevice

To get this base address, you must open the device, then copy the io_Device field from your IORequest block as the base address for this "library" routine. Note that unlike libraries, you need not issue a CloseLibrary() command after using the device routines. The CloseDevice() function call is sufficient.

An example showing how to obtain the base address for the timer device is shown in the "Timer Device" chapter in this manual.

| | 31 3 |
|-----------------|------------------|
| AbortIO | audio device |
| AbortIO | serial device |
| AbortIO | narrator device |
| AbortIO | parallel device |
| AddHandler | input device |
| AddResetHandler | keyboard device |
| AddTime | timer device |
| ALLOCATE | audio device |
| AskCType | gameport device |
| AskTrigger | gameport device |
| background | timer device |
| BeginIO | audio device |
| BeginIO | serial device |
| BeginIO | parallel device |
| BeginIO | clipboard device |
| Break | serial device |
| CDAskKeyMap | console device |
| CDAskKeyMap | console device |
| CDInputHandler | console device |
| CDInputHandler | console device |
| CDSetKeyMap | console device |
| CDSetKeyMap | console device |
| CLEAR | audio device |
| Clear | input device |
| Clear | serial device |
| Clear | console device |
| Clear | console device |
| Clear | gameport device |
| Clear | keyboard device |
| Clear | parallel device |
| Close | serial device |
| Close | narrator device |
| Close | parallel device |
| Close | clipboard device |
| CloseDevice | audio device |
| CmpTime | timer device |
| CurrentReadID | clipboard device |
| CurrentWriteID | clipboard device |
| DumpRPort | printer device |
| Expunge | audio device |
| Expunge | clipboard device |
| FINISH | audio device |
| FLUSH | audio device |
| Flush | serial device |
| Flush | printer device |
| Flush | narrator device |
| Flush | parallel device |
| FREE | audio device |
| Invalid | printer device |
| LOCK | audio device |
| Open | input device |
| Open | serial device |
| Open | gameport device |
| Open | narrator device |
| Open . | parallel device |
| Open | clipboard device |
| - . | |

| OnemDevelor | | |
|--------------------------|----------------------|--------|
| OpenDevice | | device |
| OpenDevice OpenDevice | console | |
| PERVOL | console | |
| Post | | device |
| PrtCommand | clipboard | |
| Query | printer | device |
| Query | | device |
| RawKeyConvert | parallel console | |
| RawKeyConvert | console | |
| RawWrite | printer | |
| READ | | device |
| Read | | device |
| Read | console | |
| Read | console | |
| Read | narrator | |
| Read | parallel | |
| Read | clipboard | |
| ReadEvent | gameport | |
| ReadEvent | keyboard | |
| ReadMatrix | keyboard | |
| RemHandler | | device |
| RemResetHandler | keyboard | |
| RESET | | device |
| Reset | | device |
| Reset | serial | |
| Reset | printer | |
| Reset | keyboard | |
| Reset | narrator | |
| Reset | parallel | device |
| Reset | clipboard | |
| ResetHandlerDone | keyboard | |
| SetCType | gameport | |
| SetMPort | — . — . — | device |
| SetMTrig | input | device |
| SetMType | | device |
| SetParams | serial | device |
| SetParams | parallel | device |
| SetPeriod | input | device |
| SETPREC | | device |
| SetThresh | | device |
| SetTrigger | gameport | |
| START | | device |
| Start | | device |
| Start | serial | |
| Start | printer | |
| Start | narrator | |
| Start | parallel | |
| STOP | | device |
| Stop | serial | |
| Stop | printer | |
| Stop | parallel | |
| SubTime | | device |
| TR_ADDREQUEST | | device |
| TR_GETSYSTIME | | device |
| TR_SETSYSTIME | timer | device |
| | | |

Dec 6 16:04 1985 device_list Page 3

| WAITCYCLE audio de audio de write serial de console de write console de write printer de write narrator de write parallel de write clipboard de | vice vice vice vice vice vice |
|---|--|
| | vice |

| | 1 |
|---|-----|
| audio.cevice/roofile NAME AbortIO - abort a device command | |
| SYNOPSIS AbortIO(10Request); | |
| FUNCTION Abortio tries to abort a device command. It is allowed to be unsuccessful. If the Abort is successful, the lo_Error field of the IORequest contains an indication that IO was aborted. | the |
| INPUTS 10Request pointer to the I/O Request for the command to abort | |
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audio.device/BeginIO BeginIO - dispatch a device command Dec 3 17:04 1985 audio.doc Page 3 audio.device/BaginIO

SYNOPSIS BeginIO(10Request);

Begin10 has the responsibility of dispatching all device commands. Immediate commands are always called directly, and all other commands are queued to make them single threaded

10Request -- pointer to the I/O Request for this command

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audio.device/BeginIO/ADCAD_ALLOCATE

ADCAD_ALLOCATE -- allocate a set of audio channels

ADCHD_ALLOCATE is a command that allocates multiple audio channels.
ADCHD_ALLOCATE takes an array of possible channel combinations
(loa_Data) and an allocation precedence (ln_Pri) and tries to allocate one of the combinations of channels.

If the channel combination array is zero length (loa_Length), the allocation succeeds; otherwise, ADCMD_ALLOCATE checks each combination, one at a time, in the specified order, to find one combination that does not require ADCMD_ALLOCATE to steal allocated channels. If it must steal allocated channels, it uses the channel combination that steals the lowest precedence channels. ADCHD_ALLOCATE cannot steal a channel of equal or greater precedence than the allocation precedence (ln.Pri). If it fails to allocate any channel combination and the no-wait flag (ADIOE_NOWALT) is set ADCHD_ALLOCATE returns a zero in the unit field of the I/O request (io_Unit) and an error (IOERR_ALLOCEALLED). If the no-wait flag is clear, it places the I/O request in a list that tries to allocate again whenever ADCHD_FREE frees channels or ADCHD_SETRREC lowers the channels' precedences.

are locked (ADCMD_LOCK) and if so, replies (ReplyMsg) the lock I/O request with an error (ADIOERR_CHANNELSTOLEN). Then it places the allocation I/O request in a list waiting for the locked channels to be freed. When all the allocated channels are un-locked, ADCMD_ALLOCATE: resets (CMD_RESET) the allocated channels, generates a new allocation key (loc_Allockey), if it is zero, copies the allocation key into each of the allocated channels If the allocation is successful, ADOMO_ALLOCATE checks if any channels

copies the allocation precedence into each of the allocated channels, and

copies the channel bit map into the unit field of the I/O request.

If channels are allocated with a non-zero allocation key, ADCMD_ALLOCATE allocates with that same key; otherwise, it generates a new and unique key.

ADCAD_ALLOCATE is synchronous:

. if the allocation succeeds and there are no locked channels to be stolen, or

. If the allocation fails and the no-wait flag is set.

. If the allocation fails and the no-wait flag is set.
In either case, ADCMD_ALLOCATE only replies (mr_ReplyPort) if the quick flag (IOF_QUICK) is clear; otherwise, the allocation is asynchronous, so it clears the quick flag and replies the I/O request after the allocation is finished. If channels are stolen, all audio

pointer to channel combination options (byte array, bits 0 thru 3 correspond to channels 0 thru 3)
- length of the channel combination option array (0 thru 16, 0 always succeeds) If you decide to store directly to the audio hardware registers, you must either lock the channels you've allocated, or set the precedence to maximum (ADALLOC_MANDREC) to prevent the channels from being device commands return an error (IOERR_NOALLOCATION) when the former user tries to use them again. Do not use ADCHD_ALLOCATE in interrupt pointer to message port that receives I/O request after ADIOF_NOWALT- (CLEAR) if allocation fails, wait till is bit map of successfully allocated channels (bits 0 thru 3 correspond to channels 0 thru 3)
 IOF_QUICK flag cleared if asynchronous (see above text) (ADCMD_FREE) all allocated channels when you are finished using them. - pointer to device node, must be set by (or copied from I/O block set by) OpenDevice function - command number for ADCP_ALLOCATE the allocation completes is asynchronous or quick flag allocation key, zero to generate new key; otherwise, it must be set by (or copied from I/O block set by) OpenDevice function or previous ADCMD_ALLOCATE command (SET) if allocation fails, return error Under all circumstances, unless channels are stolen, you must free (SET) only reply I/O request only if asynchronous (see above text) ADIOERR ALLOCFAILED) - (CLEAR) reply I/O request 0 - no error ADIOERR_ALLOCFAILED - allocation failed - allocation precedence (-128 thru 127) flags, must be cleared if not used: IOF_QUICK - (CLEAR) reply I/O req succeeds (ADIOF_QUICK) is set audio.doc Page 5 error number: m_ReplyPortloa AllocKey-3 17:04 1985 10_Command 10a Length lo Device to Flags 10a Data to Error to_Unit stolen.

ADCHO_FINISH -- abort writes in progress to audio charmels Dec 3 17:04 1985 audio.doc Page audio.device/BeginIO/ADCAD_FINISH

audio.device/BeginIO/ADCMD_FINISH

FUNCTION

SOURCE INISH is a command for multiple audio channels. For each selected channel (io_Unit), if the allocation key (loa_AllocKey) is correct and there is a write (DED_WRITE) in progress, ADCHD_FINISH aborts the current write immediately or at the end of the current cycle depending on the sync flag (ADIOE_SYNCYCLE). If the allocation key is incorrect ADCHD_FINISH returns an error (ADIOERR_NOALLOCATION). ADCHD_FINISH is synchronous and only replies (mr_ReplyPort) if the quick flag (IOE_QUICK) is clear. Do not use ADCHD_FINISH in interrupt code at interrupt level 5 or higher.

INPUTS

bit map of channels to finish (bits 0 thru 3 correspond - pointer to device node, must be set by (or copied from (SET) finish at the end of current m_ReplyPort- pointer to message port that receives I/O request (CLEAR) reply I/O request (CLEAR) finish immediately if the quick flag (iOF_QUICK) is clear I/O block set by) OpenDevice function flags, must be cleared if not used: command number for ADCMD_FINISH to channels 0 thru 3) IOE_QUICK -ADIOE_SYNCCYCLEto_Command to Device to Flags 10_Unit

ioa_AllocKey- allocation key, must be set by (or copied from I/O block set by) OpenDevice function or ADC#D_ALLOCATE command

OUTPUTS

bit map of channels successfully finished (bits 0 thru 3 correspond to channels 0 thru 3) error number: 10 Error 10_Unit

ADIOERR_NOALLOCATION - allocation key (loa_Allockey)
does not match key for channel

Dec 3 17:04 1985 audio.doc Page 7

audio.device/BeginIO/ADCAD_FREE

iudio.device/BeginIO/ADCAD_FREE

ADOMD_FREE -- free audio channels for allocation

FUNCTION

ADCED_FREE is a command for multiple audio charmels. For each selected channel (io_Unit), if the allocation key (ioa_AllocKey) is correct, ADCE_FREE does the following:
restores the channel to a known state (OM_RESET),

changes the channels allocation key, and makes the channel available for re-allocation.

If the channel is locked (ADCHD_LOCK) ADCHD_FREE unlocks it and clears the bit for the channel (10_Unit) in the lock I/O request.

If the lock I/O request has no channel bits set ADCHD_FREE replies the lock I/O request, and

checks if there are allocation requests (ADCMD_ALLOCATE) waiting for the channel. Otherwise, ADCHD_FREE returns an error (ADIOERR_NOALLOCATION).
ADCHD_FREE is synchronous and only replies (mn_ReplyPort) if the quick flag (IOF_QUICK) is clear. Do not use ADCHD_FREE in interrupt code.

INPUTS

m. ReplyPort- pointer to message port that receives I/O request if the quick flag (IOE_QUICK) is clear

- pointer to device node, must be set by (or copied from I/O block set by) OpenDevice function to Device

- bit map of charmels to free (bits 0 thru 3 correspond to lo_Unit

- command number for ADCMD FREE channels 0 thru 3) lo Command

- flags, must be cleared if not used: to Flags

IOF_QUICK - (CLEAR) reply I/O request allocation key, must be set by (or copied from I/O block set by) OpenDevice function or ADCMD_ALLOCATE command ion Allockey-

bit map of channels successfully freed (bits 0 thru 3 correspond to channels 0 thru 3) io_Unit

error number: to Error

does not match key for channel ADIOERR_NOWLLOCATION - allocation key (loa_AllocKey) - no error

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audio.device/BeginIO/ADCMD_LOCK

audio.device/BeginIO/ADCHD_LOCK

ADCHD_LOCK -- prevent audio channels from being stolen

ADCMD_LOCK is a command for multiple audio channels.

For each

allocations (ADCMD_ALLOCATE or OpenDevice) from stealing the channel. Otherwise, ADCMD_LOCK returns an error (ADIOERR_NOALLOCATION) and will selected channel (lo_Unit), if the allocation key (loa_AllocKey) is correct, ADCM_LOCK locks the channel, preventing subsequent not lock any channels.

Unlike setting the precedence (ADCMD_SETPREC, ADCMD_ALLOCATE or OpenDevice) to maximum (ADALLOC_MAXCREC) which would cause all subsequent allocations to fail, ADCMD_LOCK causes all higher precedence allocations, even no-vait (ADIOE_NOWAIT) allocations, to wait until the channels are un-locked.

Locked channels can only be unlocked by freeing them (ADCMD_FREE), which clears the channel select bits (io_Unit). ADCMD_LOCK does not reply the I/O request (mn_ReplyPort) until all the channels it locks are freed, unless a higher precedence allocation attempts to steal one the locked channels. If a steal occurs, ADCMD_LOCK replies and returns an error (ADIOERR_CHANNELSTOLEN). If the lock is replied (mn_ReplyPort) with this error, the channels should be freed as soon as possible. To avoid a possible deadlock, never make the freeing of stolen channels dependent on another allocations completion.

5 which case it clears the quick flag (IOE_QUICK); otherwise, it is synchronous and only replies if the quick flag (IOE_QUICK) is clear. Do not use ADCHD_LOCK in interrupt code. ADCMD_LOCK is only asynchronous if the allocation key is correct,

· INPUTS

mn_ReplyPort- pointer to message port that receives I/O request if the quick flag (IOE_QUICK) is clear to device node, must be set by (or copied from

- bit map of channels to lock (bits 0 thru 3 correspond to I/O block set by) OpenDevice function 10_Unit

channels 0 thru 3)

- command number for ADCMD_LOCK to_Command to Flags

loa_AllocKey- allocation key, must be set by (or copied from I/O block set by) OpenDevice function or ADCMD_ALLOCATE command flags, must be cleared

10_Unit OUTPUTS

correspond to channels 0 thru 3) not freed (ADCMD_FREE) - IOF_QUICK flag cleared if the allocation key is correct - bit map of successfully locked channels (bits 0 thru 3

(no ADIOERR_NOALLOCATION error) to_Flags 10_Error

error number:

) ADIOERR_NOALLOCATION - allocation key (loa_AllocKey)

does not match key for channel

B-4 -

audio.device/BeginIO/ADCAD_PERVOL selected channel (lo_Unit), if the allocation key (loa_Allockey) is correct and there is a write (CMD_WRITE) in progress, ADCMD_PERVOL loads a new volume and period immediately or at the end of the current cycle depending on the sync flaq (ADIOE_STNCCYCLE). If the allocation key in incorrect, ADCMD_PERVOL returns an error (ADIOERRA NAMILOCATION). ADCMD_PERVOL is synchronous and only replies (mn_ReplyPort) if the quick flag (IOE_QUICK) is clear. Do not use ADCMD_PERVOL in interrupt code at interrupt level 5 or higher. y-allocation key, must be set by (or copied from I/O block set by) OpenDevice function or ADCAD_ALLOCATE command - new sample period in 279.365 ns increments (127 thru ADCHD PERVOL -- change the period and volume for writes in progress to audio channels - bit map of channels that successfully loaded period and m_ReplyPort- pointer to message port that receives I/O request if the quick flag (IOE_QUICK) is clear to Device - pointer to device node, must be set by (or copied from I/O block set by) OpenDevice function volume (bits 0 thru 3 correspond to channels 0 thru 3) - bit map of charmels to load period and volume (bits 0 thru 3 correspond to charmels 0 thru 3) 0
ADIOERR_NOALLOCATION - allocation key (loa_AllocKey)
does not match key for channel - (CLEAR) reply I/O request (- (CLEAR) finish immediately (SET) finish at the end of current 65536, anti-aliasing filter works below 300 to 500 ADCHO PERVOL is a command for multiple audio channels. flags, must be cleared if not used: IOF_QUICK - (CLEAR) reply I/O r ADIOF_SYNCCYCLE- (CLEAR) finish imme - new volume (0 thru 64, linear) cycle depending on waveform) audio.doc Page 10 ioa_AllocKey- allocation key, error number: audio.device/BeginIO/ADCMD_PERVOL Dec 3 17:04 1985 1o Command 10a Per 10d ioa_Volume to Flags to_Error io_Unit io_Unit OUTPUTS INPUTS

ADIOERR_CHANNELSTOLEN- allocation attempting to steal locked channel

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audio.device/BeginIO/ADCM_SETPREC

audio.device/BeginIO/ADCMD_SETPREC

ACCHO_SETEREC is a command for multiple audio channels. For each selected charnel (io_Unit), if the allocation key (loa_Allockey) is correct, ADCHO_SETEREC sets the allocation precedence to a new value (In_Pri) and checks if there are allocation requests (ADCHO_ALLOCATE) waiting for the channel which now have higher precedence; otherwise, ADCHO_SETEREC returns an error (ADCHOERE, WAALLOCATION). ADCHO_SETEREC is synchronous and only replies (mr_ReplyPort) if the quick flag (IOE_QUICK) is clear. Do not use ADCHO_SETEREC in interrupt code. ADCHD_SETFREC -- set the allocation precedence for audio channels FUNCTION

INPUTS

new allocation precedence (-128 thru 127)

mn_ReplyPort- pointer to message port that receives I/O request
if the quick flag (IOE_QUICK) is clear
to_Device - pointer to device node, must be set by (or copied from
I/O block set by) OpenDevice function

bit map of channels to set precedence (bits 0 thru 3 correspond to channels 0 thru 3) command number for ADCHD_SETPREC io_Unit

to Command

to_Flags

flags, must be cleared if not used:

IOF_QUICK - (CLEAR) reply I/O request
allocation key, must be set by (or copied from I/O block
set by) OpenDevice function or ADCMD_ALLOCATE command 10a_AllocKey

OUTPUTS

bit map of channels that successfully set precedence (bits 0 thru 3 correspond to channels 0 thru 3) to_Unit

error number: to Error

ADIOERR_NOALLOCATION - allocation key (loa_AllocKey)
does not match key for channel

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audio.device/BeginIO/ADCMD_WAITCYCLE

ADCHD_WAITCYCLE -- wait for an audio channel to complete the current cycle of a write

waiting for a cycle to complete, in which case it clears the quick flag (IOF_QUICK); otherwise, it is synchronous and only replies if the quick flag (IOF_QUICK) is clear. Do not use ADCMD_WAITCYCLE in Interrupt code at interrupt level 5 or higher. If the allocation key (loa_Allockey) is correct and there is a wite (CMD_MRITE) in progress on selected channel, ADCMD_MRITCYCLE does not reply (mr_ReplyPort) until the end of the current cycle. If there is no write is progress, ADCMD_WRITCYCLE replies immediately. If the allocation key is incorrect, ADCMD_WRITCYCLE returns an error (IOERR_ABCRIED) if it is canceled (AbortIO) or the channel is stolen ADOMO_WAITCYCLE is a command for a single audio channel (io_Unit). ADCHD_ALLOCATE). ADCHD_WAITCYCLE is only asynchronous if it is

the quick flag (IOE_QUICK) is clear, or if a write is in progress on the selected channel and a cycle has m_ReplyPort- pointer to message port that receives I/O request, completed

pointer to device node, must be set by (or copied from bit map of channel to wait for cycle (bits 0 thru 3 correspond to channels 0 thru 3), if more then one bit is set lowest bit number channel is used I/O block set by) OpenDevice function lo_Device lo_Unit

- command number for CMD_WAITCYCLE flags, must be cleared if not used: IOF_QVICK - (CLEAR) reply I/O request to_Command to Flags

(SET) only reply I/O request if a write is in progress on the selected channel and a cycle has completed allocation key, must be set by (or copied from I/O block set by) OpenDevice function or ADCHD_ALLOCATE command ioa_AllocKey- allocation key,

10_Unit OUTPUTS

bit map of channel that successfully waited for cycle (bits 0 thru 3 correspond to channels 0 thru 3)
IOF_QUICK flag cleared if a write is in progress on the selected channel error number: to Flags to Error

- canceled (AbortIO) or channel stolen

- allocation key (loa_AllocKey) does not match key for channel ADIOERR NOALLOCATION

Dec 3 17:04 1985 audio.doc Page 14 audio.device/BeginIO/CAD_FLUSH 10 Error 10_Unit audio.device/BeginIO/CMD_CLEAR COD_CLEAR is a standard command for multiple audio channels. For each selected channel (io_Uhit), if the allocation key (loa_AllocKey) is correct, CHO_CLEAR does nothing; otherwise, CHO_CLEAR returns an error (ADIOERR.NOALLOCATION). CHO_CLEAR is synchronous and only replies (mr.ReplyPort) if the quick flag (IOE_QUICK) is clear. - command number for CM_CLEAR
- flags, must be cleared if not used:
IOE_QUICK - (CLEAR) reply I/O request

- allocation key, must be set by (or copied from I/O block set by) OpenDevice function or ADCMD_ALLOCATE command mn_ReplyPort- pointer to message port that receives I/O request after if the quick flag (IOE_QVICK) is clear to bointer to device node, must be set by (or copied from I/O block set by) OpenDevice function to_Unit - bit map of channels to clear (bits 0 thru 3 correspond bit map of channels successfully cleared (bits 0 thru 3 correspond to channels 0 thru 3) ADIOERR_NOALLOCATION - allocation key (loa_Allockey) does not match key for channel - no error OMD_CLEAR -- throw away internal caches to channels 0 thru 3) Dec 3 17:04 1985 audio.doc Page 13 error number: audio.device/BeginIO/OM_CLEAR loa Allockeylo_Command to Flags 10 Error to_Unit FUNCTION OUTPUTS

NAME

CMD_FLUSH -- cancel all pending I/O

FUNCTION

CMD_FLUSH is a standard command for multiple audio charmels. For each selected charmel (10_Unit), if the allocation key (10a_AllocKey) is correct, CMD_FLUSH aborts all writes (PCD_WRITE) in progress or queued and any I/O requests validing to synchronize with the end of the cycle (ADIORER_MOMINCYCLE); otherwise, CMD_FLUSH returns an error (ADIORER_MOMINCYCLE); otherwise, CMD_FLUSH returns an error (ADIORER_MOMINCYCLE); otherwise, CMD_FLUSH returns an error (ADIORER_MOMINCYCLE); otherwise, CMD_FLUSH is synchronous and only replies (m_ReplyPort' pointer to message port that receives I/O request if the quick flag (IOF_QUICK) is clear.

INPUTS

INPUTS

INPUTS

INDUTS

IO_DAVICE POINTER to device node, must be set by (or copied from I/O block set by) OpenDevice function in the command number for CMD_FLUSH intumed from I/O block set by) OpenDevice function or ADCMD_ALIOCATE command number for CMD_FLUSH intumed (bits 0 thru 3 correspond to channels o thru 3)

IO_Command -- command number for CMD_FLUSH inclused from I/O block set by) OpenDevice function or ADCMD_ALIOCATE command ourselves that map of channels successfully flushed (bits 0 thru 3 correspond to channels o thru 3)

IO_Unit -- bit map of channels successfully flushed (bits 0 thru 3 correspond to channels 0 thru 3)

IO_Unit -- bit map of channels o thru 3)

IO_Error -- error number:

-- no error

ADIOGRE_NOALLOCATION -- allocation key for channel

audio.device/BeginIO/CMD_READ O'D READ is a standard command for a single audio channel (lo_Unit). If the allocation key (loa_Allockey) is correct, CAD READ returns a pointer (lo_Data) to the I/O block currently writing (CAD_MRITE) on the selected channel; otherwise, CAD_READ returns an error (ADIORRANDALLOCATION). If there is no write in progress, CAD_READ returns zero. CAD_READ is synchronous and only replies (mr.ReplyPort) IOF_QUICK - (CLEAR) reply I/O request allocation key, must be set by (or copied from I/O block set by) OpenDevice function or ADCMD_ALLOCATE command m. ReplyPort- pointer to message port that receives I/O request after if the quick flag (IOE_QUICK) is clear to_bevice - pointer to device node, must be set by (or copied from I/O block set by) OpenDevice function
10_Unit - bit map of channel to read (bit 0 thru 3 corresponds to channel 0 thru 3), if more then one bit is set lowest pointer to I/O block for current write, zero if none is 0
ADIOERR_NOALLOCATION - allocation key (loa_AllocKey)
does not match key for channel bit map of channel successfully read (bit 0 thru 3 - flags, must be cleared if not used: corresponds to channel 0 thru 3) - command number for CMD_READ if the quick bit (IOF_QUICK) is clear. bit number channel read OMD_READ -- normal I/O entry point audio.doc Page 15 error number: audio.device/BeginIO/CMD_READ 10a AllocKey-Dec 3 17:04 1985 10 Flags to Error 10a Data to_Unit FUNCTION OUTPUTS INPUTS

audio.device/BeginIO/OfD_RESET For each flags, must be cleared if not used:
 IOE_QUICK - (CLEAR) reply I/O request
 allocation key, must be set by (or copied from I/O block set by) OpenDevice function or ADCHD_ALLOCATE command bit map of channels to successfully reset (bits 0 thru 3 Otherwise, CMD_RESET returns an error (ADIOERR_NOALLOCATION).

CMD_RESET is synchronous and only replies (mm_ReplyPort) if the quick flag (IOE_QUICK) is clear. Do not use CMD_RESET in interrupt code at interrupt level 5 or higher. - pointer to device node, must be set by (or copied from I/O block set by) OpenDevice function bit map of channels to reset (bits 0 thru 3 correspond OWD_RESET is a standard command for multiple audio channels. For easelected channel (10_Unit), if the allocation key (10a_AllocKey) is correct, OMD_RESET: ADIOERR_NOALLOCATION - allocation key (loa_AllocKey)
does not match key for channel mn.ReplyPort- pointer to message port that receives I/O request if the quick flag (IOE_QUICK) is clear clears the hardware audio registers and attach bits, sets the audio interrupt vector, cancels all pending I/O (CMD_FLUSH), and un-stops the channel if it is stopped (CMD_STOP), correspond to channels 0 thru 3) Of RESET -- restore device to a known state - no error - command number for CAD RESET to channels 0 thru 3) - error number: audio.device/BeginIO/OM_RESET toa Allockeyto Command to_Device to_Flags lo_Unit 10 Error to_Unit OUTPUTS INPUTS

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audio.device/BeginIO/CMD_START same waveform and their outputs are mixed. OND_START is synchronous and only replies (mr.ReplyPort) if the quick flag (IOF_QUICK) is clear. Do For each command number for CMD_START
 flags, must be cleared if not used:
 IOE_QUICK - (CLEAR) reply I/O request
 allocation key, must be set by (or copied from I/O block set by) OpenDevice function or ADCMD_ALLOCATE command bit map of channels successfully started (bits 0 thru 3 correspond to channels 0 thru 3) simultaneously to minimize distortion if the channels are playing the mn_ReplyPort- pointer to message port that receives I/O request after if the quick flag (IOE_QUICK) is clear to_bevice - pointer to device node, must be set by (or copied from I/O block set by) OpenDevice function selected channel (lo_Unit), if the allocation key (loa_AllocKey) is correct and the channel was previously stopped (Q40_STQP), C40_STARI immediately starts all writes (C40_WRITE) to the channel. If the bit map of channels to start (bits 0 thru 3 correspond not use CHD_START in interrupt code at interrupt level 5 or higher. allocation key (loa_AllocKey) does not match key for channel OMD_START is a standard command for multiple audio channels. allocation key is incorrect, OW_START returns an error (ADIOERR_NOALLOCATION). OW_START starts multiple channels 0 - no error ADIOERR_NOALLOCATION - allocation key Of START -- start device processing (like 'Q) to channels 0 thru 3) audio.doc Page 17 audio.device/BeginIO/CAD_START 10a_AllocKey-Dec 3 17:04 1985 1o Command to Flags lo_Unit 10 Error to_Unit OUTPUTS INPUTS

audio.device/BeginIO/OfD_STOP COESTOP is a standard command for multiple audio channels. For each selected channel (io_Unit), if the allocation key (ioa_AllocKey) is correct, CAE_STOP immediately stops any writes (CAE_NRITE) in progress; otherwise, CAE_STOP returns an error (ADIOERR_NOWLOCATION). CAE_WRITE queues up writes to a stopped channel until CAE_STAR starts the channel or CAE_REST resets the channel. CAE_STOP is synchronous and only replies (mr_ReplyPort) if the quick flag (IOE_QUICK) is clear. Do not use CAE_STOP in interrupt code at interrupt level 5 or bit map of channels to stop (bits 0 thru 3 correspond to channels 0 thru 3) flags, must be cleared if not used:
IOF_QUICK - (CLEAR) reply I/O request
allocation key, must be set by (or copied from I/O block
set by) OpenDevice function or ADCMD_ALLOCAIR command m_ReplyPort- pointer to message port that receives I/O request after if the quick flag (IOE_QUICK) is clear to be pointer to device node, must be set by (or copied from I/O block set by) OpenDevice function - bit map of channels successfully stopped (bits 0 thru 3 ADIOERR_NOALLOCATION - allocation key (loa_AllocKey)
does not match key for channel correspond to channels 0 thru 3) - no error CMD_STOP -- stop device processing (like 'S) - command number for Off STOP error number: audio.device/BeginIO/CAD_STOE toa Allockeyto_Command to_Flags to Error 10_Unit 10_Unit FUNCTION OUTPUTS INPUTS

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audio.device/BeginIO/OED_UPDATE IOF_QUICK - (CLEAR) reply I/O request allocation key, must be set by (or copied from I/O block set by) OpenDevice function or ADCMD_ALLOCATE command CPD_UPDATE is a standard command for multiple audio channels. For each selected channel (io_Uhit), if the allocation key (loa_Allockey) is correct, CPD_UPDATE does nothing; otherwise, CPD_UPDATE returns an error (ADIOERR_NOALLOCATION). CPD_UPDATE is synchronous and only replies (m_ReplyPort) if the quick flag (IOE_QUICK) is clear. bit map of channels to update (bits 0 thru 3 correspond bit map of channels successfully updated (bits 0 thru 3 correspond to channels 0 thru 3) m_ReplyPort- pointer to message port that receives I/O request after if the quick flag (IOE_QUICK) is clear to_Device - pointer to device node, must be set by (or copied from I/O block set by) OpenDevice function ADIOERR_MOALLOCATION - allocation key (loa_AllocKey)
does not match key for channel - flags, must be cleared if not used: command number for CMD_UPDATE CHD_UPDATE -- force dirty buffers out to channels 0 thru 3) Dec 3 17:04 1985 audio.doc Page 19 error number: audio.device/BeginIO/CAD_UPDATE los Allockeyto Command to_Flags to Error lo Unit 10_Unit FUNCTION OUTPUTS INPUTS STORY

audio.device/BeginIO/CMD_WRITE message (loa_WiteMsg). CMD_WRITE returns an error (IOERR_ABGRIED) if it is canceled (AbortIO) or the channel is stolen (ADCMD_ALLOCATE). CMD_WRITE is only asynchronous if there is no error, in which case it clears the quick flag (IOF_QVICK) and replies the I/O request (mn_ReplyPort) after it finishes writting; otherwise, it is synchronous 1/0 block set by) OpenDevice function bit map of channel to write (bit 0 thru 3 corresponds to channel 0 thru 3), if more then one bit is set lowest bit number channel is written command number for CMD_MRITE sample period in 279.365 ns increments (127 thru 65536, anti-aliasing filter works below 300 to 500 depending on (or copied from I/O block m_ReplyPort- pointer to message port that receives I/O request after (10_Unit). ADIOE_PERVOL - (SET) load volume and period ADIOE_MRITEMESSACE - (SET) reply message at write start allocation key, must be set by (or copied from I/O bloc set by) OpenDevice function or ADCMD_ALLOCATE command pointer to waveform array (signed bytes (-128 thru 127) OD_WRITE is a standard command for a single audio channel (io_Unit) if the allocation key (ioa_AllocKey) is correct, CMD_WRITE plays a sound using the selected channel; otherwise, it returns an error (ADIOERR_MOMILOCATION). CMD_WRITE queues up requests if there is another write in progress or if the channel is stopped (CMD_STOP). When the write actually starts; if the ADIOE_PREVOL flag is set, CMD_WRITE loads volume (ioa_Volume) and period (ioa_Period), and if the ADIOE_WRITEMESSARE flag is set, CMD_WRITE replies the write - pointer to device node, must be set by (or copied from length of the wave array in bytes (2 thru 131072, must waveform), if enabled by ADIOF PERVOL volume (0 thru 64, linear), if enabled by ADIOF PERVOL number of times to repeat array (0 thru 65535, 0 for - bit map of channel successfully written (bit 0 thru 3 Do not message replied at start of write, if enabled by ADIOF_WRITEMESSAGE in custom chip addressable ram and word aligned) and only replies if the quick flag (IOF_QUICK) is clear. Do OMD_MRITE in interrupt code at interrupt level 5 or higher. corresponds to channel 0 thru 3)
- IOF_QUICK flag cleared if there is no error flags, must be cleared if not used: O'D_WRITE -- normal I/O entry point the write completes be even number) - error number: audio.device/BeginIO/CMD_MRITE Infinite) loa_AllocKeyloa_WriteMsgto_Command loa_Length Los Period loa_Cycles loa_Volume to Device loa Data to Flags to Flags lo_Unit to Error to_Unit OUTPUTS

Dec 3 17:04 1985 audio.doc Page 20

audio.device/CloseDevice FUNCTION

The CloseDevice routine notifies the audio device that it will no longer be used. It takes an I/O audio request block (IOWudio) and clears the device pointer (io_Device). If there are any channels allocated with the same allocation key (loa_Allockey), CloseDevice frees (ADCMD_FREE) them. CloseDevice decrements the open count, and if it falls to zero and an expunge (Expunge) is pending, the device is st - pointer to audio request block (struct IOAudio)
lo_Device - pointer to device node, must be set by (or
copied from I/O block set by) open (openDevice)
io_Unit - bit map of channels to free (ADCM_FREE) (bits 0
thru 3 correspond to channels 0 thru 3)
ioa_Allockey- allocation key, used to free channels iORequest - pointer to audio request block (struct IOAudio)
io_Device - set to -1
io_Unit - set to zero CloseDevice - terminate access to the audio device Dec 3 17:04 1985 audio.doc Page 22 CloseDevice (iORequest); audio.device/CloseDevice INPUTS 10Request expunded. SYNOPSIS OUTPUTS If CMD_MRITE starts the write immediately after stopping a previous write, you must set the ADIOE_PERVOL flag or else the new data pointer (low_Data) and length (low_Length) may not be loaded. ADIOERR_NOALLOCATION - allocation key (loa_AllocKey) does not match key for charmel - canceled (AbortiO) or charmel - no error stolen Dec 3 17:04 1985 audio.doc Page 21 IOERR ABORTED

audio.device/OpenDevice It takes an allocation key (loa Allockey); otherwise, it returns an error (IOERR_OPENEALL). OpenDevice increments the open count keeping the device from being expunged (Expunge). If the length (loa_Length) is non-zero, OpenDevice tries to allocate (ADCM_ALLOCATE) audio channels from a array of channel combination options (loa_Data). If the array, bits 0 thru 3 correspond to channels 0 thru 3), only necessary for allocation (non-zero allocation succeeds, the allocated channel combination is loaded into the unit field (loa_Unit); otherwise, Openbevice returns an error ADIOERRALICETAILED). Openbevice does not wait for allocation to succeed and closes (CloseDevice) the audio device if it fails. To allocate channels, Openbevice also requires a properly initialized reply port (m_ReplyPort) with an allocated signal bit. - bit map of successfully allocated channels (bits IOERR_OPENFAIL - open failed ADIOERR_ALLOCFAILED - allocation failed, no open loa_AllocKey- unique allocation key, if OpenDevice succeeds The OpenDevice routine grants access to the audio device. It takes I/O audio request block (iORequest) and if it can successfully open the audio device, it loads the device pointer (io_Device) and the length)
- length of the channel combination option array pointer to device node if OpenDevice succeeds, mn_ReplyPort- pointer to message port for allocation, only - pointer to channel combination options (byte 0 thru 3 correspond to channels 0 thru 3) if allocation, otherwise 0 error = OpenDevice("audio.device", unitNumber, 10Request, flags); - allocation precedence (-128 thru 127), only necessary for allocation (non-zero length) necessary for allocation (non-zero length) 10Request - pointer to audio request block (struct IOAudio) iORequest - pointer to audio request block (struct IOAudio) (0 thru 16), zero for no allocation - no error OpenDevice - open the audio device - error number: otherwise -1 3 17:04 1985 audio.doc Page 24 - copy of 10 Error unitNumber- not used - not used loa Length audio.device/OpenDevice to Device loa Data ויקטו to Error SYNOPSIS flags FUNCTION error OUTPUTS audio.device/Expunge The Expunge routine is called when a user issues a RemDevice call. By the time it is called, the device has already been removed from the device list, so no new opens will succeed. The existence of any other users of the device, as determined by the device open count being non-zero, will cause the Expunge to be deferred. When the device is not in use, or no longer in use, the Expunge is actually performed.

EXPUNCE - indicate a desire to remove the Audio device

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audio.device/Expunge

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| NAVE BeginIO - initiate clipboard device IO STACESIS STAC | Dec 3 17:04 1985 clipboard.doc Page 2 | |
|--|--|-----------------|
| Smilo(loRequest), sysBase DoIO(loRequest), sysBase FUNCTION The BeginIO is the workhorse device function used to initiate device commands. It can be called directly or via the enso library functions SendiO and DoiO. | te clipboard device IO | .device/BeginIO |
| FUNCTION The Deginio is the workhorse device function used to initiate device commands. It can be called directly or via the exections Sendio and Dolo. The Degin of the commands of the canaly of the commands of the canaly functions Sendio and Dolo. | SYNOPSIS SendIO(10Request), sysBase DoIO(10Request), sysBase | |
| | FUNCTION The BeginIO is the workhorse device function used to in device commands. It can be called directly or via the library functions SendIO and DoIO. | riate xec |
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| Nower Carrier/Close CurrentReadID - determine the current read identifier. FUNCTION CurrentReadID fills the locity of post command if greater that the can be command if greater that the post identifier that the post identifier that the post of a post command if greater than application is not valid for its own pasting. 10 PREMERTS Locity Description of the current write is set in Command Colling present by demonstration is command colling present by demonstration is command colling the ClipID of the current write is set | | Dec 3 17:04 1985 | clipboard.doc Page 4 | |
|---|------------------------|--|--|-----|
| NWE CurrentReadID - determine the current read identifier. FUNCTION CurrentReadID fills the locClipID with a clip identifier that can be compared with that of a post command: if greater than the post identifier than the post destifier than the post destifier than application is not valid for its own pasting. 10 REQUEST Lobestage m.Replyfort set up to Device broad present by OpenDevice to Device present by OpenDevice to Device to Command OPU.CLIPREADID Lo.ClipID the ClipID of the current write is set | clipboard.device/Close | clipboard.device/C | | QIP |
| CurrentReadID fills the lo.ClipID with a clip identifier that can be compared with that of a post command; if greater than the post lates held privately by an application is not valid for its own pasting. 10 REQUEST Lo. Message m.ReplyFort set up to Device present by OpenDevice to Lo. Unit present by OpenDevice to Lo. Command OWD.CLIPERADID 10_ClipID the ClipID of the current write is set | | NAME CurrentRes | dID - determine the current read identifier. | |
| isage m.ReplyPort set up preset by OpenDavice preset by OpenDavice mand CMD_CLIPREADID the ClipID of the current write is set | that the | FUNCTION OurrentRea can be con the post 1 | dID fills the io_ClipID with a clip identifier that pared with that of a post command: if greater than dentifier then the post data held privately by an n is not valid for its own pasting. | |
| the ClipID of the current write is set | | IO REQUEST Lo_Massage Lo_Device Lo_Unit Lo_Command | mn.ReplyPort set up preset by OpenDevica preset by OpenDevica GMD_CLIPREADID | |
| | | 10_C11pID | the ClipID of the current write is set | |
| | | | | |
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| | | | | |

FUNCTION
The close routine notifies the clipboard device that the iORequest will no longer be used.

NAME Close - terminate access to the clipboard device

clipboard.device/Close

SYNOPSIS CloseDavice(iORequest), sysBase

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| clipboard.device/Expunge | clipboard.device/Expunga |
|--|---|
| NAME Expunge - indicate a desire to remove the clipboard device | lipboard device |
| SYNOPSIS <expunge application="" by="" called="" generally="" is="" not="" programs=""></expunge> | tion programs> |
| FUNCTION The Expunge routine is called when the system needs the memory used by the clipboard device, and the clipboard device has no open units. The clipboard device is removed from memory until next needed (i.e. until the next OpenDevice("clipboard.device",); | cem needs the memory coard device has no od from memory until |
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| | Citycour a . 0871C8/F05E | | | | | | |
|----------------------------|-------------------------------|----------------------|--|--|--|--|--|
| clipboard.doc Page 8 st | Post - post clip to clipboard | | mr.kaplyfort set up preset by OpenDevice preset by OpenDevice CBD_POST pointer to satisfy message port zero | | | | |
| usc 3 1/:04 1985 cl | NAME Post - post c | EUNCTION IO REQUEST | to_Device 10_Device 10_Unit 10_Command 10_Deta 10_CipID | | | | |

clipboard.device/Open

A successful OpenDevice call must be matched by a CloseDevice call when access to the device is no longer needed.

The open routine grants access to a device. There are two fields in the iQRequest block that will be filled in: io_Device and io_Unit.

SYNOPSIS
OpenDevice ("clipboard.device", unit, iORequest, 0), sysBase

FUNCTION

NAME Open - a request to open the clipboard device

clipboard.device/Open

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| 11pboard.doc Page 9 | Dec 3 17:04 1985 cl3 | clipboard.doc Page 10 | |
|--|--|---|----|
| clipboard.device/Read | clipboard.device/Reset | clipboard.device/Reset | |
| clip from clipboard | NAME Reset - reset | - reset the clipboard | |
| | FUNCTION Reset resets the cl | ION Reset resets the clipboard device without destroying handles to the open device. | |
| mm.ReplyFort set up preset by OpenDevice preset by OpenDevice preset by OpenDevice Of D.READ number of bytes in data buffer pointer to buffer of data to fill zero if this is the initial read, Offset of the SeakType is successful SeakType performed zero if this is the initial read | IO REQUEST 10 Justsage 10 Device 10 Command 10 Flags | m.ReplyPort set up preset by OpenDevice CMD_RESET IOB_QUICK set if quick I/O is possible | |
| | | | |
| | | | ٦. |

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NAME Read - read clip from clipboard

FUNCTION

IO REQUEST
io_Massage
io_Device
io_Unit
io_Command
io_Length
io_Data
io_Offset

to_C14pID

clipboard.device/Read

| | tt • | | | |
|-----------------------|--------------------------------|---|--|--|
| | clipboard.device/Mrite | | m_ReplyPort set up preset by OpenBevice OD_MRITE color of bytes to process pointer to block of data to process pointer to block of data to process zero if this is the initial write the Post if this is to satisfy a post | |
| clipboard.doc Page 12 | q | Write - write clip to clipboard !ION | mn_ReplyPort set up preset by OpenDevice preset by OpenDevice O'MD_WRITE number of bytes to propoliter of block of a zero if this is the in zero if this is the in the Post if this is to the post if this is to the in the Post if this is to the Post if this is the in the Post if this is the Indiana Post if the Indiana Po | |
| Dec 3 17:04 1985 cl. | clipboard.device/Nrite NAME | Write - write FUNCTION | 10 Message 10 Device 10 Unit 10 Command 10 Deta 10_Offset 10_ClipID | |

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| console.device/CDAsid/eyMap | get the current key map structure for this console. DATA buffer with the current KeyMap structure in console unit. | mn_ReplyPort set if quick I/O is not possible preset by the call to OpenDevice Dreset by the call to OpenDevice CD_ASKETMAP IOE_QUICK If quick I/O possible, else zero sizeof(*losyMap) struct KeyMap* item/Map elight longwords to describe the raw lonycode to byte stream conversion. | This function sets the error field in the lORequest, and fills the structure at IO_DATA with the current key map. | |
|-----------------------------|---|--|---|--|
| console.device/CDAskKeyMap | NAME AskKeyMap - get the curre FUNCTION Fill the IO_DATA buffer v use by this console unit. | use by this of the control of the co | RESULTS This function the structure | |

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console.device/CDAsidkeyMap console.device/CDIrputHandler console.device/CISetkeyMap console.device/Clear console.device/OpenDevice console.device/RankayConvert console.device/RankayConvert console.device/RankayConvert

| NAME SetkeyMap - set the current key map structure for this console FUNCTION Set the current KeyMap structure used by this console unit to the structure pointed to by IO_DATA IO REQUEST Io_Message mn_ReplyPort set if quick I/O is not possible io_Data preset by the call to OpenDevice io_Unit preset by the call to OpenDevice io_Longth struct ("length to preset by the call to OpenDevice io_Longth struct ("length to preset by the call to OpenDevice io_Longth struct ("length to preset by the call to OpenDevice io_Longth struct ("length to preset by the call to OpenDevice io_Longth struct ("length to preset be accounted to byte stream conversion. RESULTS This function sets the error field in the iORequest, and fills the current key map from Io_DATA. | SetKeyMap TION Set the cu the struct to Struct | at the current key map structure for this console it KeyMap structure used by this console unit to pointed to by IO_DATA mm_ReplyPort set if quick I/O is not possible |
|--|--|---|
| Set the current KeyMap structure used by this console unit to the structure pointed to by IO_DWTA TO REQUEST IO_Pessage M_ReplyPort set if quick I/O is not possible to Device preset by the call to OpenDevice to Unit preset by the call to OpenDevice to Command O_SETREMAPA IO_Pends sizeof(*NewMap) IO_Data struct KeyMap *NewMap IO_DATA This function sets the error field in the iORequest, and fills the current key map from IO_DATA. | FUNCTION Set the currer the structure IO REQUEST io_Message io_Device io_Unit | |
| 10 REQUEST 10 Message 10 Message 10 Device 10 Devic | IO REQUEST io_Message io_Device io_Unit | mn.ReplyPort set if quick I/0 is not possible |
| This function sets the error field in the 10Request, and fills the current key map from IO_DATA. | 10_Command 10_Flags 10_Length 10_Data | preset by the call to OpenDevice preset by the call to OpenDevice CSETMEYMAP IOE_QUICK I/O possible, else zero sizeof("keyMap) struct KeyMap eight longwords that describe the raw keycode to byte stream conversion. |
| | RESULTS This function the current ke | sets the error field in the iORequest, and fills y map from IO_DATA. |
| | | |
| | | |

This function is different from standard device commands in that it is a function in the console device library vectors. The "OpenLibrary" call for the console device is to OpenDevice("console device", -1, 10Request, 0), and then grab the io_Device field out of the iORequest as the library vector.

Accept input events from the producer, which is usually the rom imput.task.

console.device/ColmputHandler

ColimputHandler - handle an imput event for the console device

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console.device/CDImputHandler

SYNOPSIS CDImputHandler(events, consoleDev) A0 A1

FUNCTION

NOTES

| Dec 3 17:04 1985 console.doc Page 6 | console.device/OpenDevice | NAME OpenDevice - a request to open | SYNOPSIS OpenDevice ("console.device", uni | The open routine grants access the fields in the iORequest block the IO_DEVICE field and possibly the IMs open command differs from in that it requires some information supplies the window device for output. | The unit number that is a standits used specially by this device no actual console is to be open pointer to the device library we the supplied window to a unique must be done at a level higher to their numbers. | 10 REQUEST struct Window *v io_Data This is the winc console. It must be Openbavica of RPort of this wi the console when write command. |
|-------------------------------------|---------------------------|--|--|---|---|---|
| console.doc Page 5 | r console.device/Clear | ar console input buffer | None from the input buffer any reports waiting to satisfy read requests. | mn_ReplyPort set if quick I/O is not possible preset by the call to OpenDevice preset by the call to OpenDevice CMD_CLEAR IOB_QUICK set if quick I/O is possible | | |
| Dec 3 17:04 1985 | console.device/Clear | NAME Clear - clear | FUNCTION Remove from th | IO REQUEST to Message to Device to Unit to Command to Flags | O and the control of | |

| NAME OpenDevice - a request to open a Console device | SINCESIS OpenDevice ("console.device", unit, iORequest, 0) FUNCTION The open routine grants access to a device. There are two fields in the iORequest block that will be filled in: the IO_DEVICE field and possibly the IO_UNIT field. | This open command differs from most other device open commands in that it requires some information to be supplied in the IO_DATA field of the iORequest block. This initialization information supplies the window that is used by the console device for output. | The unit number that is a standard parameter for an open call is used specially by this device. A unit of -1 indicates that no actual console is to be opered, and is used to get a pointer to the device library vector. A unit of zero binds the supplied window to a unique console. Sharing a console must be done at a level higher than the device. There are no other valid unit numbers. | 10 REQUEST io_Data This is the window that will be used for this console. It must be supplied if the unit in the OpenDevice call is 0 (see above). The RPort of this window is potentially in use by the console whenever there is an outstanding write command. | | |
|--|--|--|--|--|---------------------------------------|--|
| 2 | | | | OI | · · · · · · · · · · · · · · · · · · · | |

console.device/OpenDevice

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console.device/RawKeyConvert

console.device/RawKeyConvert

SYNOPSIS

actual = RawKeyConvert(event, buffer, length, keyMap),

RawKeyConvert - decode raw input classes

consoleDev

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FUNCTION

8

This console function converts input events of type IECLASS_RAWREY to ANSI bytes, based on the keyMap, and places the result into the buffer.

INPUTS

length - maximum anticipation, 1.e. the buffer size in bytes. keyMap - a KeyMap structure pointer, or null if the default console device key map is to be used. event - an InputEvent structure pointer.
buffer - a byte buffer large enough to hold all anticipated
characters generated by this conversion.

RESULTS

actual - the number of characters in the buffer, or -1 if a buffer overflow was about to occur.

if actual is -1, a buffer overflow condition was detected. Not all of the characters in the buffer are valid.

that it is a function in the console device library vectors. The "OpenLibrary" call for the console device is to OpenDevice ("console.device", -1, 10Request, 0), and then grab the io Device field out of the 10Request as the library This function is different from standard device commands in

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console.device/Read

console.device/Read

S S

Read - return the next input from the keyboard

FUNCTION

Read the next input, generally from the keyboard. The form of this input is as an ANSI byte stream: i.e. either ASCII text or control sequences. Raw input events received by the console device can be selectively filtered via the SRE and RRE control sequences (see the write command). Keys are converted via the keymap associated with the unit, which is modified with AskKeyMap and SetKeyMap

<CSI>1;0;<keycode>;<qualifiers>;0;0;<seconds>;<microseconds>q would return raw keycode reports with the information from If, for example, raw keycodes had been enabled by writing $\langle CSI>1s$ to the console (where $\langle CSI>1s$ \$98 or Esc[), keys the input event itself, in the form:

satisfied, but if there is some input, but not as much as can fill IO_LENCIH, the request will be satisfied with the input If there is no pending input, this command will not be currently available.

IO REQUEST

mn.ReplyPort set if quick I/O is not possible preset by the call to OpenDevice preset by the call to OpenDevice IOF_QUICK if quick I/O possible, else zero The destination for the characters to read from the keyboard. sizeof(*buffer) char buffer[] CO READ io_Message to_Device to_Command to_Flags to_Length to_Unit o Data

RESULTS

and fills This function sets the error field in the iORequest, and fillithe iORequest IO_DATA area with the next input, and IO_ACTUAL with the number of bytes read.

| 11A CUU CURSOR UP 11B CUD CURSOR POWN 11C CURSOR PACKWARD 11D CUB CURSOR PRECEEDINC LINE 11F CPL CURSOR PRECEEDINC LINE 11F CPL CURSOR PRECEEDINC LINE 11J ED ERASE IN DISPLAY (only to end of display) 11J ED ERASE IN LINE (only to end of line) 11L IL INSERT LINE 11L INSERT LINE 11P DCH DELETE CHARACTER 12R CAR CURSOR POSITION REPORT (in Read stream only) 13 SCROLL UP 14 SELET CHARACTER 15 SU SCROLL UP 16 SELECT GRAPHIC RENDITION 17 SO SCROLL UP 18 SH RESET MODE 19 SET RODE 10 ASLL SET LINE LENCTH (private Amiga sequence) 11 aslLP SET PACE LENCTH (private Amiga sequence) 11 aslLP SET RAW EVENTS (private Amiga sequence) 12 SSU SERIEST RAW EVENTS (private Amiga sequence) 13 arr REPET RAW EVENTS (private Amiga sequence) 14 aslCN SEPCIAL KEY REPORT (private Amiga sequence) 15 asr SET RAW EVENTS (private Amiga sequence) 16 arr REPET RAW EVENTS (private Amiga sequence) 17 ascr SET RAW EVENTS (private Amiga sequence) 18 ascr SET CURSOR REDUITION (private Amiga sequence) 18 ascr SET CURSOR REDUITS (private Amiga sequence) 19 ascr SET CURSOR REDUITS (private Amiga sequence) 20 q awsr MINDOM STATUS REQUEST (private Amiga sequence) 21 awsr MINDOM STATUS REQUEST (private Amiga sequence) 22 awar MINDOM STATUS REQUEST (private Amiga sequence) 23 awar MINDOM STATUS REQUEST (private Amiga sequence) | |
|---|--|
|---|--|

console.device/Write m_ReplyPort set if quick I/O is not possible preset by the call to OpenDevice preset by the call to OpenDevice CMD_MRITE IOF_QUICK if quick I/O possible, else zero sizeof(*buffer) char buffer[] a buffer containing the ANSI text to write to the console device. INDEX: move the active position down one line Control Sequences (introduced by CSI, i.e. \$9B or Esc[) with parameters: "1" is an optional numeric parameter. "2" are two numeric parameters - e.g. '14;94', and "3" is any number of numeric parameters, seperated by semicolins -- Esc[Name Definition Write a text record to the display. Note that the RPort of the console window is in use while this write command is REVERSE INDEX: CONTROL SEQUENCE INTRODUCER: see next list ISO Compatable Escape Sequences (introduced by Esc) INT INTERRUPT (will not be supported later) RIS RESET TO INITIAL STATE Independent Control Functions (no introducer) Code Name Definition Write - write text to the display CARRIAGE RETURN SHIFT OUT SHIFT IN ESCAPE Dec 3 17:04 1985 console.doc Page 9 BACKSPACE LINE FEED VERTICAL TAB FORM FEED ICH INSERT CHARACTER Code or Esc Name Definition NEXT LINE Name Definition IND RI RI ANSI CODES SUPPORTED console.device/Write lo Message lo Device lo Unit lo Command lo Flags lo Jength lo Data pending. 10 REQUEST 00/10 00/10 00/11 00/13 00/14 00/15 08/ 4 08/ 5 08/13 09/11 Esc FUNCTION SAR

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narrator device/MortIO narrator device/Close narrator device/Flush narrator device/Read narrator device/Reset narrator device/Reset

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| Dec. 4 09:36 1985 marraton don D. | |
|--|---|
| Cage 3 | Dec 4 09:36 1985 narrator.doc Page 4 |
| narrator.device/Close | |
| NAME NAME | narrator.device/Flush |
| CloseDevice - terminates access to the narrator device | NAME Flush - Aborts all improvement and missing and missing |
| SYNOPSIS | SISDONIS |
| | Standard device command. See DoIO/SendIO |
| Close invalidates the IO_UNIT and IO_DEVICE fields in the IORB, preventing subsequent IO until enother Contract in the IORB. | FUNCTION Aborts all improgress and queued speech requests. |
| CloseDevice also reduces the open count. If the count | SINANI |
| expunsed. If the open count goes to zero and the delayed expunses bit is not count goes to zero and the delayed | 10_Command - OPD_FLUSH |
| THERMS | |
| IORequest block | SEE ALSO |
| RESULIS [ORequest block with unit and dewice anothers immaliated] | |
| SEE ALSO | |
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narrator.device/Open of these operations fail, an error is returned (see the .hi files for possible error return codes). Next, OpenDevice (done for all opens, not just the first one) initializes the user's IORequest block (IORB). Default values for sex, rate. to use non-default values for these parms, the values must be set after the open is done. OpenDevice then assigns a pseudo-unit number to the IORB for use in synchronizing read and write requests. See the read command for more details. OpenDevice checks the unit number, and if non-zero, returns an error (ND UnitErr). If this is the first time the driver has been opened, OpenDevice will attempt to open the audio device and allocate the driver's static buffers. If either pitch, pitch mode, sampling frequency, and mouths are set in the appropriate fields of the IORB. Note that if users wish The OpenDevice routine grants access to the narrator device. Finally, OpenDavice stores the davice node pointer in the IORB and clears the delayed expunge bit. error = OpenDevie("narrator.device", 0, IORequest, 0); - the user's ICRB (need not be initialized) error - same as to Error field of IORB deviceName - must be "narrator.device" OpenDevice - open the narrator device. Dec 4 09:36 1985 narrator.doc Page 5 - 150 words/minute - 110 Hz unitNumber - must be 0 - not used - Natural sampfreq - 22200 - Male IORB fields set: - Off narrator.dev1ce/Open ORequest mouths volume pitch mode rate SYNOPSIS SEE ALSO FUNCTION RESULTS INPUTS

```
narrator.device/Read
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           The shape returned is guaranteed
                                                                                                                                                                                                                                                                                                                                                                                                                                        The read command of the narrator device returns mouth
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  to be differnt from the previously returned shape (allowing updating to be done only when something has changed). Each read request is associated with a
                                                                                                                                                                                                                 Read - Return the next different mouth shape from an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               write request by the pseudo-unit number assigned by
the OpenDevice call. Since the first structure in
the read-mouth IORB is a narrator (write) IORB, this
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         how the user knows that the write request has finished and that s/he should not issue any more reads. Note that in this case the mouth shapes may
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IQRB with the narrator_rb structure copied from the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            association is easily made by copying the narrator IORB into the narrate_rb field to the read IORB. See the .hi files. If there is no write in progres or in the device input queue with the same pseudo-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         unit number as the read request, the read will be returned to the user with an error. This is also
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      not be different from previously returned values.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         associated write request except for:

io_Message - message port for read request

io_Command - CMD_READ

io_Error - 0

width - 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    width - mouth width in millimeters/3.67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              - compressed form of mouth shapes
                                                                                                                                                                                                                                                                                                                                        See DoIO/SendIO.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (division done for scaling) height - mouth height in millimeters
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (internal use only)
Dec 4 09:36 1985 narrator.doc Page 6
                                                                                                                                                                                                                                                                                                                                                 Standard device command.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           shapes to the user.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IORB fields set:
                                                                                                                                                                                                                                                       associated write
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Write command
                                                                                                                            narrator.device/Read
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                height
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          shape
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEE ALSO
                                                                                                                                                                                                                                                                                                                    SYNOPSIS
                                                                                                                                                                                                                                                                                                                                                                                                                   FUNCTION
```

| narrator.device/Start |
|--|
| NAME Stop - Stops the device. Start - Restarts the device after Stop |
| SYNOPSIS Standard device commands. See DoIO/SendIO |
| FUNCTION StopIO halts the currently active speech (if any) and prevents any queued requests from starting. |
| StartIO restarts the currently active speech (if any) and allows queued request to start. |
| INPUTS 10_Command = CPD_STOP or CPD_START |
| RESULTS |
| SEE ALSO |
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narrator.device/Write The function sets the io_Error field of the ICRB. The IO_Actual field is set to the length of the input string that was actually processed. If the return code indicates a phoneme error (ND_PhonErr), io_Actual is the position in the input string where the error occured. ch_masks - array of audio channel selection masks (see audio device documentation for description of this field)
rm_masks - number of audio channel selection masks mouths - 0 if no mouths are desired

1 if mouths are to be read Write - Send speech request to the narrator device Performs the speech request. If there is an associated read request on the device input queue, write will remove it and return an initial mouth shape to the user. Note that if you are going to be doing reads, the mouths parameter must be Standard device command. See DoIO/SendIO. io_Data - input string io_Length - length of input string 0 if natural mode 1 if robotic mode Dec 4 19:36 1985 narrator.doc Page 9 speaking rate
 pitch
 pitch mode io_Message - message port io_Command - CMD_WRITE Read command. Audio device documentation. - 0 if male - 1 if female Narrator IORB narrator.device/Write pitch mode set to 1. rate sex SEE ALSO SYNOPSIS FUNCTION RESULTS INPUTS

| Dec 3 17:04 1985 parallel.doc Page 1 | Dec 3 17:04 1985 parallel.doc Page 2 |
|---|---|
| TABLE OF CONTENTS | parallel.device/AbortIO parallel.device/Abor |
| parallel.device/AbortIO parallel.device/BeginIO parallel.device/Clear parallel.device/Clear parallel.device/Close parallel.device/Close | AbortIO abort the specified I/O request FUNCTION This function aborts the specified read or write request. If the request is active, it is stopped immediately. If the request is queued, it is painlessly removed. |
| parallel.device/Query parallel.device/Read parallel.device/Read | INPUTS 10Request pointer to the ICRqst Block that is to be aborted. |
| parallel.device/SetParams parallel.device/Start parallel.device/Stop parallel.device/Mrite | RESULTS Error If the Abort succeded, then Error will be #IOERR_ABORTED (-2) and the request will be flagged as aborted (bit 5 of 10_Flags set). If the Abort falled, then the Error will be zero. |
| - R-35 | |
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parallel.device/AbortIO

| | Dec 3 17:04 1985 p | 3 17:04 1985 parallel.doc Page 4 | |
|--|--|--|-----------------------|
| parallel.device/BeginIO | parallel.device/Clear | h | parallel.device/Clear |
| | NAME Clear clea | : Clear clear the parallel port buffer | |
| e parallel | FUNCTION This function | FUNCTION This function just RIS's (no buffer to clear) | |
| the handling hence, if so and thusly apletion is | IO REQUEST 10 Message 10 Device 10 Unit 10 Command | mn.ReplyPort initialized set by OpenDevice set by OpenDevice CAD_CLEAR | |
| alid read or aver as queueing. | RESULIS Error none | | |
| size (tion), process, process, de built at | | | |
| be null. non-zero. eplyMsg. | · | . • | |
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INPUTS

!ORequest -- pointer to an I/O Request Block of size
!o_ExtParSize (see paralle).! for size/definition),
containing a valid function in lo_Command to process,
as well as the function's other required parameters.
devicaNode -- pointer to the "paralle].device" node built at
init, and put into lo_Device at Open.

Error -- if the BeginIO succeded, then Error will be null. If the BeginIO failed, then the Error will be non-zero. Most I/O errors won't be reported until the ReplyMsg.

This function initiates a I/O request made to the parallel device. Other than read or write, the functions are performed synchronously, and do not depend on any interrupt handling logic (or it's associated discontinuities), and hence, if so selected, can be performed as IC_QUICK.

Reads and writes are merely initiated by BeginlO, and thusly return to the caller as begun, not completed. Completion is signalled via the standard ReplyMsg routine. A valid read or write request is performed asynchronously, and never as IC_QUICK. Multiple requests are handled via FIEO queueing.

BeginIO -- start up an I/O process

FUNCTION

parallel.device/BeginIO

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| If the Flush failed, then the Error will be non-zero. | RESULTS Error if the Flush succeded, then Error will be mull. If the Flush failed, then the Error will be non-zero. | 10 REQUEST 10 Message mn_ReplyPort initialized 10 Device set by OpenDevice 10 Unit set by OpenDevice 10_Command CMD_FLUSH | FUNCTION This function purges the read and write request queues for the parallel device. | NAME Flush clear all queued I/O requests for the parallel port | parallel.device/Flush | |
|---|---|---|--|--|-----------------------|--|
|---|---|---|--|--|-----------------------|--|

parallel.device/Close

FUNCTION
This function closes software access to the parallel device.

NAME Close -- close the parallel port

parallel.device/Close

SYNOPSIS CloseDevice (deviceNode)

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INPUTS
deviceNode - pointer the device node, set by Open

SEE ALSO parallel.device/Open

| Dec 3 17:04 1985 parallel.doc Page 7 | Dec 3 17:04 1985 parallel.doc Page 8 |
|--|---|
| | |
| parallel.device/Open | parallel.device/Query |
| NAME Open a request to open the parallel port | NAME Ouery query parallel port// tea etatue |
| SYNOPSIS OpenDevice(parname, unit, loRequest, flags) | FUNCTION This function comments |
| FUNCTION | nus imeción return the status of the parallel port lines and registers. |
| This function allows the requestor software access to the parallel device. Unless the shared-access bit (bit 5 of io_ParFlags) is set, exclusive use is granted and no other access is allowed until the owner closes the device. OpenDevice initializes the io_Device and io_Unit fields to 0, | 10 REQUEST 10_Message mn_ReplyPort initialized 10_Device set by OpenDevice 10_Unit set by OpenDevice 10_Command prown Ownery (As) |
| INPUTS parname - pointer to literal string "parallel.device" | |
| unit - ignored loRequest - pointer to an loRequest block of size io ExtParSize (see parallel.i for size/definition) to be initialized by the Open routine. | * * * |
| MOTE use of io_Parflags (see FUNCTION above) ################################### | |
| RESULTS D0 pointer to the device node Error if the Open succeded, then Error will be null. If the Open failed, then the Error will be non-zero. | |
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parallel.device/Query

parallel.device/Read This function causes a stream of characters to be read from the parallel I/O register. The number of characters is specified in to Langth, unless -1 is used, in which case input is read until an EOF is read (currently 0x00). If no read request has been made, pending input (1.e. handshake request) is not acknowledged. um_ReplyPort initialized set by OpenDevice set by OpenDevice CMD_READ IOF_QUICK if quick I/O possible and desired number of characters to receive, or if set to -1 receive until EOF read in pointer where to put the data. Error -- if the Read succeded, then Error will be null. If the Read failed, then the Error will be non-zero. parallel.device/BeginIO, parallel.device/SetParams -- read imput from parallel port Dec 3 17:04 1985 parallel.doc Page 9 parallel.device/Read 10 REQUEST to_Message to_Device to_Unit to_Command to_Flags to_Length 10 Data SEE ALSO RESULTS

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parallel.device/Reset

parallel.device/Reset

Reset -- reinitializes the parallel port

FUNCTION

This function resets the parallel port to its freshly initialized condition. It aborts all I/O requests both queued and current and sets the port's flags and parameters to their boot-up time

default values.

IO REQUEST 10_Message

mn_ReplyPort initialized set by OpenDevice set by OpenDevice CMD_RESET

to_Device to_Unit 1o_Command

RESULTS

Error -- if the Reset succeded, then Error will be null. If the Reset failed, then the Error will be non-zero.

| Dec 3 17:04 1985 parallel.doc Page 12 | parallel.device/Start | NAME Start restart paused I/O over t | This function restarts the current port by reactivating the handshaking port by reactivating the handshaking bort by reactivating the handshaking lo Bevice set by OpenDevice lo Device set by OpenDevice lo Unit set by OpenDevice lo Unit set by OpenDevice lo Unit set by OpenDevice lo Command OPD_START RESULTS Error if the Start succeded, the If the Start failed, then the Is SEE ALSO parallel.device/Stop |
|---------------------------------------|-------------------------------------|---|--|
| 5 parallel.doc Page 11 | betParams parallel.device/SetParams | change parameters for the parallel port | Parallel port. It will disallow change parameters for the parallel port. It will disallow changes if any reads or writes parallel port. It will disallow changes if any reads or writes ast-live or quested. The Eoffeds bit of io SerFlags can be set/readt without a call to Separamas. The Shared bit of io SerFlags pertains to OpenDevice calls only. ALL OWER PARAMETERS CAN OWLY EE CHANGED BY THE SETRANSE FUNCTION. (IIII) Separation. Lo. Device set by OpenDevice ast by OpenDevice set set of the Configuration. Lo. Parellags Lo. Device Lo. DevenDevice Lo. Device Lo. Device Lo. Device Lo. Device Lo. De |
| Dec 3 17:04 1985 | parallel.device/SetParams | NAME SetParams | FUNCTION This function parallel port are active or set,/reset vil 10_Serflags 10_Bessage 10_Bevice 10_Unit 10_Command NOTE 10_Pertflags 10_PrermArray 10_PrermArray 10_PrermArray 10_PrermArray 10_PrermArray 10_PrermArray 10_PrermArray |

parallel.device/Start tion restarts the current I/O activity on the parallel eactivating the handshaking sequence. if the Start succeded, then Error will be null. Start failed, then the Error will be non-zero. restart paused I/O over the parallel port mr.ReplyPort initialized set by OpenDevice set by OpenDevice CMD_START device/Stop Start

parallel.device/Write This function causes a stream of characters to be written to the parallel output register. The number of characters is specified in io_Length, unless -1 is used, in which case output is sent until an EOF is encountered (currently 0x00). mm. ReplyPort initialized set by OpenDevice set by OpenDevice CMD_WRITE IOF_QWICK if quick I/O possible and desired number of characters to transmit, or if set to -1 send until EOF encountered pointer to block of data to transmit Error -- if the Write succeeded, then Error will be null. If the Write failed, then the Error will be non-zero. parallel.device/BeginIO, parallel.device/SetParams Write -- send output to parallel port Dec 3 17:04 1985 parallel.doc Page 14 parallel.device/Write IO REQUEST 10 Message 10 Device 10 Unit 10 Command 10 Elags 10_Length 10 Data FUNCTION SEE ALSO RESULTS parallel.device/Stop This function halts the current I/O activity on the parallel device by discontinuing the handshaking sequence. Error -- if the Stop succeded, then Error will be null. If the Stop failed, then the Error will be non-zero. Stop -- pause current activity on the parallel port mr.ReplyPort initialized set by OpenDevice set by OpenDevice GMD_STOP Dec 3 17:04 1985 parallel.doc Page 13 parallel.device/Start

SEE ALSO

parallel.device/Stop

10_Message 10_Device 10_Unit 10_Command

RESULTS

IO REQUEST

FUNCTION

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interpretation of Dest parameters: if SPECIAL_MIL is set, then the associated parameter is specified in thousandths of if all bits for a dimension are clear, the an inch on the printer. if SPECIAL_FULL is set, then the dimension the upper word is reserved and should be zero the x offset into the RastPort the y offset into the RastPort the x size in the RastPort to be printed the y size in the RastPort to be printed io DestCols that may produce unexpected results when they are not greater than zero and lo_Special is zero. They have been retained for compatability. The user will not trigger these other rules with well formed usage of lo_Special. DumpaPort - dump the specified RastPort to a graphics printer. ptr to a ColorMap. the 'modes' flag as from a ViewPort structure these two parameters describe the size of the area to print to on the printer, as described configuration limits, whichever is less).

If SPECIAL_FRAC is set, the parameter is taken to be a longword binary fraction of the maximum for that dimension. parameter is specified in printer pixels. m_ReplyPort set if quick I/O is not possible PRD_DUMPRPORT determined by the printer limits or the There exist rules for the interpretation of io_DestRows and if ASPECT is set, one of the dimensions may be reduced to preserve the aspect capability to use this command.

Color printers may not be able to print black and white or greyscale pictures -- specifically, the Okimate 20 cannot print these with a color ribbon: use a black one. is set to the maximum possible (as The printer selected in preferences must have graphics 10B_QUICK set if quick I/O is possible Print a rendition of the supplied RastPort, ColorMap, position and scaling information, the printer preferences. ratio of the print. ptr to a RastPort. printer.device/DumpRPort 10_SrcHelght 10_DestCols lo SrcWidth 10 RastPort lo_ColorMap lo DestRows 10_Special to Message to Command 10_Modes to Flags lo SrcX lo_SrcY IO REQUEST FUNCTION printer.device/PrtCommand printer.device/DumpRPort printer.device/RawWrite printer.device/Invalid printer.device/Flush printer.device/Reset printer.device/Start printer.device/Write printer.device/Stop TABLE OF CONTENTS

printer.device/DumpRPort

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using the supplied as specified in

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| Par 3 17:04 1985 printer.doc Page 4 NAME Flush - abort all I/O requests (immediate) FUNCTION FUNCTION FLUSH aborts all stopped I/O at the unit. IO REQUEST Lo_Message mr_ReplyPort set if quick io_Command io_Command QMD_FLUSH io_Flags IOB_QUICK set if quick I/O |
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|---|

| printer.device | NAME POPrtC | FUNCTION This fundavios. | be found may not | 10 REQUEST to Mees to Devy to Lo Com to Prtt to Part | RESULTS Errors OU | SEE ALSO printe | | | | |
|-------------------------------|---------------------------|--|--------------------------|--|-------------------|--------------------|--|---------------------------------------|---------|--|
| 114 | | · 15 48-1 | | | | | | · · · · · · · · · · · · · · · · · · · | <u></u> | |
| nvalid printer.device/Invalid | Invalid - invalid command | ION Invalid is always an invalid command, and sets the device error appropriately. | | nd CWD_NUCK set if quick I/O is possible | | | | | | |
| printer.device/Invalid | NAME Invalid | FUNCTION Invalid error a | IO REQUEST 10_Massage | 10_Command 10_Flags | | | | | | |

| Dec 3 17:04 1985 printer.doc Page 6 |
|---|
| printer.device/PrtCommand printer.device/PrtCommand |
| NAME PCPrtCommand send a command to the printer |
| FUNCTION This function sends a command to either the parallel or serial device. The printer device maps this command to the control code set of the current printer. The commands supported can be found with the printer. device/Mrite command. All printers may not support all functions. |
| 10 REQUEST 10PrtCmdReq io_Message m_ReplyPort set io_Device preset by OpenDevice io_Unit preset by OpenDevice io_PrtCommand PRD_PRTCOMMAND io_PrtCommand the actual command number io_Parm1 parameter for the command io_Parm2 parameter for the command io_Parm3 parameter for the command io_Parm3 parameter for the command |
| RESULIS Errors: if the PCPrtCommand succeeded, then Error will be zero. Otherwise the Error will be non-zero. |
| SEE ALSO printer.device/Mrite printer.h, parallel.device, Preferences |

| /Reset | neset - reset the printer device without destroying handles to the open device. | usage mr_ReplyPort set if quick I/O is not possible ice preset by the call to OpenDevice GTD_RESET gs IOB_QUICK set if quick I/O is possible | | | • |
|------------------------------|---|--|--|--|---|
| printer.device/Reset NAME | FUNCTION Reset resets the pr to the open device. | 10 REQUEST 10 Message 10 Device 10 Command 10 Flags | | | |

printer.device/Rawhrite

m_ReplyPort set if quick I/O is not possible PRD_RAWRITE IOB_QUICK set if quick I/O is possible the number of bytes in io_Data the raw bytes to write to the printer

10 REQUEST 10 Message 10 Command 10 Flags 10 Length 10 Data

FUNCTION
This is a non standard write command that performs no processing on the data passed to it.

NAME Rawhrite - transparent write command

printer.device/Rawhrite

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| printer.device/Stop | | 50 111 0 1 the | sible | | | |
|---------------------|---|---|---|-----|--|--|
| prlni | Immediate) | Stop pauses all queued requests for the unit, and tries to pause the current I/O request. The only commands that will be subsequently allowed to be performed are immediate I/O requests, which include those to start, flush, and finish the I/O after the stop command. | mn_ReplyPort set if quick I/O is not possible preset by the call to OpenDevice CMD_STOP IOB_QUICK set if quick I/O is possible | | | |
| | - pause current and queued I/O requests (immediate) | he unit, and comman of are imt, flush, | m.ReplyPort set if quick I/O is not popreset by the call to OpenDevice CMD_STOP IOB_QUICK set if quick I/O is possible | | | |
| | ued I/O r | sts for t t. The o e perform e to star | set if q e call to t if quic | | | |
| | t and que | ued reque /O reques owed to b lude thos | ReplyPort set by th STOP QUICK se | | | |
| | e current | all quer urrent I, ntly allo hich inc he stop o | J. P. GO. | • • | | |
| printer.device/Stop | sned - do | op pauses use the c subseque quests, w | QUEST 10 Message 10 Device 10 Command 10 Flags | | | |
| Inter.dev | Stop | Stol Stol Pau be req req 1/0 | IO REQUEST 10 Mes 10 Der 10 Cor 10 Ell | | | |

printer.device/Start

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printer.device/Start

m_ReplyPort set if quick I/O is not possible preset by the call to OpenDevice CMD_START IOB_QUICK set if quick I/O is possible

IO REQUEST
10_Message
10_Device
10_Command
10_Flags

Start - restart after stop (immediate)
FUNCTION
Start restarts the unit after a stop command.

| 3 17:04 1985 printer.doc | ESC[6w ESC[5w | ESC[6"z ESC[5"z | ESC [4"z ESC [3"z ESC [2"z ESC [1"z | ESC[2v ESC[1v ESC[4v ESC[3v ESC[0v | ESCL ESCK BSC (B ESC (K ESC (K ESC (A ESC (A | ESC (Y ESC (Z ESC (J ESC (6 ESC (C | ESC(2p ESC(1p ESC(0p | ESC [| ESC[0z ESC[1z ESC[nt ESC[nq ESC[0q ESC#9 | ESC#8 ESC#2 ESC [Pn1;P ESC [Pn1;P ESC#3 |
|--------------------------------------|----------------------|--|---|---|---|--|----------------------------|---|--|--|
| Dec 3 17:04 19 | aSHORP6 aSHORP5 | aDEN6 aDEN5 | aDEN4 aDEN3 aDEN2 aDEN1 | aSUS2 aSUS1 aSUS4 aSUS3 aSUS0 | aPLU aPLD aENT0 aENT1 aENT2 aENT3 aENT3 aENT4 | aFNT6 aFNT7 aFNT8 aENT9 aENT10 | aPROP2 aPROP1 aPROP0 | aJFY5 aJFY7 aJFY6 aJFY0 aJFY1 aJFY1 aJFY1 | aVERPO aVERP1 aSLPP aPERF aPERF aPERFO aLMS aLMS aRMS | aTMS aBMS aSTBM aSLRM aCAM aHTS |
| | Ē. | | | | | | | | | |
| Dec 3 17:04 1985 printer.doc Page 11 | printer.device/Write | NAME PCM-its send output to the printer | FUNCTION This function causes a buffer of characters to be written to the either the parallel or serial device. The number of characters is specified in io_Length, unless -1 is used, in which case output is | send until a 0x00 is encountered. The Printer device, like the Console device, maps ANSI X3.64 style 7-bit printer control codes to the control code set of the current printer. The ANSI codes supported can be found below. All printers may not support all functions. | 10 REQUEST io_Message mn_ReplyPort set io_Device preset by OpenDevice io_Unit preset by OpenDevice io_Command CMD_WRITE io_Length | RESULIS Errors: if the POWrite succeeded, then Error will be zero. Otherwise the Error will be non-zero. | ANSI X3.64 style COMMANDS | aRIS ESCc reset aRIN ESC#1 initialize aIND ESCD 1f aNEL ESCE return, 1f aRI ESCM reverse 1f | 23 ESC [3m 23 ESC [3m 4 ESC [23m 4 ESC [4m 24 ESC [4m ESC [1m 1 ESC [1m ESC [1m | ASEC SCR40-49 set background color ASEC[04 normal pitch ASEC[24 elite on ASEC[14 elite of ASEC[14 elite of ASEC[14 condensed fine on ASEC[34 condensed off |

| 12 | enlarged on enlarged off | shadow print on shadow print off doublestrike on doublestrike off NLQ on NLQ of | superscript on superscript off subscript of subscript off normalize the line partial line up | US char set French char set German char set UK char set Danish I char set Sweden char set Italian char set Spanish char set Japanese char set Norweign char set Danish II char set | proportional on proportional off proportional clear set proportional offset auto left justify auto right justify auto full justify auto full justify auto full justify word fill(auto center) | 1/8" line spacing 1/6" line spacing set form length n perf skip n (n>0) perf skip off | Left margin set Right margin set Top margin set Bottom marg set T&B margins L&R margins | Set horiz tab |
|---------------------|-----------------------------|--|---|--|--|---|---|---------------|
| printer.doc Page 12 | ESC[6w ESC[5w | ESC[6"z ESC[5"z ESC[4"z ESC[3"z ESC[2"z ESC[1"z | ESC [2v ESC [1v ESC [4v ESC [3v ESC [0v ESC [0v | ESC (R ESC (R ESC (R ESC (F ESC (C ESC (T ESC (C ESC (C ESC (C ESC (C ESC (C ESC (C ESC (C ESC (C ESC (C | ESC(2p ESC(1p ESC(0p ESC(0p ESC(5 F ESC(7 F ESC(0 F ESC(3 F ESC(1 F | ESC [0z ESC [1z ESC [nt ESC [nq ESC [0q | ESC#9 ESC#0 ESC#8 ESC#2 ESC[Pn1;Pn2r ESC[Pn1;Pn2s ESC[Pn1;Pn2s | ESCH |
| Dec 3 17:04 1985 | aSHORP6 aSHORP5 | aDEN6 aDEN5 aDEN4 aDEN3 aDEN2 aDEN2 | aSUS2 aSUS1 aSUS4 aSUS3 aSUS0 aPLU aPLU | aENT1 aENT2 aENT3 aENT4 aENT5 aENT5 aENT5 aENT6 aENT9 aENT9 | aPROP2 aPROP1 aPROP0 aTSS aJFY5 aJFY7 aJFY6 aJFY0 aJFY1 aJFY1 | aVERPO aVERP1 aSLPP aPERF aPERF | aLMS aRMS aTMS aSTEM aSLRM aCAM | aHTS |
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|----------------------------------|--|----------|---|
| | Set vertical tabs Clr horiz tab Clear all h tab Clr vertical tabs Clr all v tabs Clr all h & v tabs Set default tabs extended commands | | |
| 3 17:04 1985 printer.doc Page 13 | ESCJ ESC[09 ESC[39 ESC[19 ESC[49 ESC 44 ESC 45 ESC 45 | | |
| Dec 3 17:04 1985 | aVTS aTBC0 aTBC1 aTBC1 aTBC4 aTBCALL aTBCALL aEYSALL | | |
| | | - B-49 - | _ |

WANTE MANAGEMENT OF THE CUTTENT ROY MAN STRUCTURE for this console RIMCTION THE CONTROL OF THE CUTTENT ROY OF THE CUTTENT ROY OF THE CUTENT ROY OF THE CONTROL OF THE CONTR

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console.device/CDAskKeyNap console.device/CDImputHandler

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console.device/CDSetKeyMap

console.device/Clear

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console.device/Read console.device/Write

gamaport.device/AskCrlype gamaport.device/AskTrigger gamaport.device/Clear gamaport.device/ReadEvent gamaport.device/SetCrlype gamaport.device/SetCrlype gamaport.device/SetTrigger input.device/Addiandler

Input.device/SetMPort Input.device/SetMTrig

input.device/Reset

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Input.device/Clear

reyboard device/RemesetHandler reyboard device/Reset reyboard device/ResetHandlerDone

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eyboard

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Imput.device/Start

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| | | |
| console.device/CDImputHandler | console.device/CDSetKeyMap | |
| or the console device | NAME SetKeyMap - set the current key map structure for this console | |
| | FUNCTION Set the current KeyMap structure used by this console unit to the structure pointed to by IO_DATA | |
| ich is usually the | 10 REQUEST 10 Message m_ReplyPort set if quick I/O is not possible 10 Device preset by the call to OpenDevice 10 Unit preset by the call to OpenDevice | |
| device commands in ce library vectors. vice is to to then grab as the library | 10_Command CD_SETMEYMAP 10_Flags IOF_QUICK 1f quick I/O possible, else zero 10_Length sizeof(*keyMap) 10_Data struct KeyMap *keyMap elght longwords that describe the raw keycode to byte stream conversion. | |
| | RESULTS This function sets the error field in the iORequest, and fills the current key map from IO_DATA. | |
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This function is different from standard device commands in that it is a function in the console device library vectors. The "OpenLibrary" call for the console device is to OpenDevice ("console.device", -1, ICRequest, 0), and then grab the 1o_Device field out of the ICRequest as the library vector.

Accept input events from the producer, which is usually the rom imput.task.

WirputHandler - handle an input event for the console device

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console.device/CDImputHandler

SYNOPSIS CDImputHandler (events, consoleDev) A0 A1

FUNCTION

| ig. | | | | | · · · · · · · · · · · · · · · · · · · |
|----------------------|----------------------------|--|--|--|---------------------------------------|
| console.device/Clear | clear console input buffer | ION Remove from the input buffer any reports waiting to satisfy read requests. | mn_ReplyFort set if quick I/O is not possible preset by the call to OpenDevice preset by the call to OpenDevice CMD_CLEAR IOB_QUICK set if quick I/O is possible | | |
| console.device/Clear | <u> </u> | FUNCTION Remove from the read requests. | 10 REQUEST 10 Message 10 Device 10 Unit 10 Command 10 Flags | | |

NAME
OpenDevice - a request to open a Console device
SYNOPSIS
OpenDevice ("console.device", unit, 10Request, 0)
FUNCTION
The open routine grants access to a device. There are two fields in the 10Request block that will be filled in: the IO_DEVICE field and possibly the IO_UNIT field.
This open command differs from most other device open commands in that it requires some information to be supplied in the IO_DATA field of the 10Request block. This initialization information supplies the window that is used by the console device for output.

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The unit number that is a standard parameter for an open call is used specially by this device. A unit of -1 indicates that no actual console is to be opened, and is used to get a pointer to the device library vector. A unit of zero binds the supplied window to a unique console. Sharing a console must be done at a level higher than the device. There are no other valid unit numbers.

IO REQUEST

io_Data

This is the window that will be used for this console. It must be supplied if the unit in the Openbevice call is 0 (see above). The RPORT of this window is potentially in use by the console whenever there is an outstanding

write command.

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console.device/RawKeyConvert

NAME
RawKeyConvert - decode raw imput classes

SYNOPSIS

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actual = RawKeyConvert (event, buffer, length, keyMap),
consoleDev A0 A1 D1 A2
A6 A6

This console function converts input events of type IECLASS_RAWKEY to ANSI bytes, based on the keyMap, and places the result into the buffer.

places the result into the buffer.

INPUTS

event - an ImputEvent structure pointer.

buffer - a byte buffer large enough to hold all anticipated characters generated by this conversion.

length - maximum anticipation, i.e. the buffer size in bytes. keyMap - a KeyMap structure pointer, or null if the default consoled device by map is to be used.

consoleder - the lo_Device of the console device.

RESULIS actual - the number of characters in the buffer, or -1 if a buffer overflow was about to occur.

ERRORS

if actual is -1, a buffer overflow condition was detected.

Not all of the characters in the buffer are valid.

NOTES

This function is different from standard device commands in that it is a function in the console device library vectors.

The "OpenLibrary" call for the console device is to OpenDevice ("console device", -1, iORequest, 0), and then grab the io_Device field out of the iORequest as the library

console.device/Read Read the next input, generally from the keyboard. The form of this input is as an ANSI byte stream: i.e. either ASCII text or control sequences. Raw input events received by the console device can be selectively filtered via the SRE and RRE control sequences (see the write command). Keys are converted via the keymap associated with the unit, which is modified with AskKeyMap and SetKeyMap <CSI>1;0; <keycode>; <qualiflers>;0;0; <seconds>; <mlcroseconds>q satisfied, but if there is some input, but not as much as can fill IO_LENCTH, the request will be satisfied with the input mn_ReplyPort set if quick I/O is not possible preset by the call to OpenDevice preset by the call to OpenDevice would return raw keycode reports with the information from the input event itself, in the form: IOF_QUICK if quick I/O possible, else zero The destination for the characters to read If, for example, raw keycodes had been enabled by writing <CSI>1s to the console (where <CSI> is \$98 or Esc[), keys If there is no pending input, this command will not be Read - return the next input from the keyboard from the keyboard. sizeof (*buffer) char buffer[] CAD READ currently available. console.device/Read 10 Message to_Command 10_Length 10_Data 10 Device to Flags 10_Unit IO REQUEST

console.device/Write INDEX: move the active position down one line m.ReplyPort set if quick I/O is not possible preset by the call to OpenDevice preset by the call to OpenDevice OND_WRITE IOF_QUICK if quick I/O possible, else zero sizeof(*buffer), or -1 if mull terminated char buffer[] a buffer containing the ANSI text to write to Control Sequences (introduced by CSI, 1.e. \$9B or Esc[) with parameters: "1" is an optional numeric parameter. "2" are two numeric parameters - e.g. '14;94', and "3" is any number of numeric parameters, seperated by semicolins --Write a text record to the display. Note that the RPort of the console window is in use while this write command is pending. CONTROL SEQUENCE INTRODUCER: see next list ISO Compatable Escape Sequences (introduced by Esc) Independent Control Functions (no introducer) HORIZONTAL TABULATION SET the console device. Write - write text to the display RIS RESET TO INITIAL STATE CARRIACE RETURN REVERSE INDEX: Dec 3 17:04 1985 rawinput.doc Page VERTICAL TAB ICH INSERT CHARACTER Code or Esc Name Definition Definition NEXT LINE: FORM FEED SHIFT OUT BACKSPACE LINE FEED SHIFT IN Name Definition ESCAPE Name Definition R SE ES IS ANSI CODES SUPPORTED Name console.device/Write io Message lo Device lo Unit lo Command lo Flags lo Length lo Data SI SO SE TER : 08/4 08/5 08/8 08/13 IO REQUEST 00/10 00/10 00/11 00/13 00/14 00/15 FUNCTION

17:04 1985 rawinput.doc Page 10

1A CUU CURSOR DOWN

1B CUD CURSOR PORCAVARD

1C CURSOR PRECEEDING LINE

IF CAL CURSOR PRECEEDING LINE

IF CAL CURSOR PRECEEDING LINE

II CHT CURSOR PRECEEDING LINE

III CHT CURSOR PRECEEDING LINE

III ERASE IN DISPLAY (only to end of display)

III INSERT LINE

III CHT CURSOR POSITION REPORT (in Read stream only)

IS SOUGLI UP

SOURCE CURSOR TABULATION CONTROL

IS SOUCH UP

SOURCE CONTROL

IN HAY HARIZOWYLA AND VERTICAL POSITION

IN RESET MODE

31 RM RESET MODE

32 SELCT GAAPHIC RENDITION

IN SERET MODE

34 SET NOTE

35 SET INTE LENCTH (private Amiga sequence)

35 SINE SET RAW FUENTS (private Amiga sequence)

36 AIRE INTERIOR CURSOR (private Amiga sequence)

37 SERE RESET RAW FUENTS (private Amiga sequence)

38 SER DRIVER STROKT (private Amiga sequence)

39 ARRE RESET RAW FUENTS (private Amiga sequence)

31 ARRE RESET RAW FUENTS (private Amiga sequence)

31 ARRE RESET RAW FUENTS (private Amiga sequence)

32 SERE CURSOR RENDITION (private Amiga sequence)

34 ARRE RESET RAW FUENTS (private Amiga sequence)

35 ARRE RESET RAW FUENTS (private Amiga sequence)

36 ARRE RESET RAW FUENTS (private Amiga sequence)

37 AND AMERICAN REPORT (private Amiga sequence)

38 ARRE RESET RAW FUENTS (private Amiga sequence)

39 ARRE RESET RAW FUENTS (private Amiga sequence)

30 AMERICAN REPORT (private Amiga sequence)

31 AMERICAN REPORT (private Amiga sequence)

32 AND AMERICAN REPORT (private Amiga sequence)

33 AND AMERICAN REPORT (private Amiga sequence)

34 AND AMERICAN REPORT (private Amiga sequence)

36 AMERICAN REPORT (private Amiga sequence)

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34 AMERICAN REPORT (private Ami

200

gameport.device/AskTrigger GPTB_DOWNKEYS set if button down transitions trigger a report, and GPTB_UPKEYS set if button up m.ReplyPort set if quick I/O is not possible preset by the call to OpenDevice preset by the call to OpenDevice GPD_ASKTRIGGER This command inquires what conditions must be met by a game port unit before a pending Read request will be satisfied. These conditions, called triggers, are independent -- that any one occurs is sufficient to queue a game port report to the Read queue. These conditions are set by SetTrigger. AskTrigger - inquire the conditions for a game port report sizeof(gamaportTrigger)
a structure of type GamaportTrigger, which a distance in x which, if exceeded, triggers a a distance in x which, if exceeded, triggers a a time which, if exceeded, triggers a report; measured in vertical blank units (60/sec) IOB_QUICK set if quick I/O is possible has the following elements This command always executes immediately. transitions trigger a report 3 17:04 1985 rawinput.doc Page 12 gameport.device/AskTrigger report report gpt_Timsout gpt Delta got_YDelta io Massaga io Device io Unit Lo_Command io_Flags io_Length io_Data IO REQUEST <u>6</u> gamaport.device/AskCType

un_ReplyPort set if quick I/O is not possible preset by the call to OpenDevice preset by the call to OpenDevice CPD_ASKCITPE

to Message to Device lo_Command to Flags to Langth to Data

IO REQUEST

lo_Unit

the address of the byte variable for the IOB_QUICK set if quick I/O is possible

at least 1 result

This command identifies the type of controller at the game port, so that the signals at the port may be properly interpreted. The controller type has been set by a previous

This command always executes immediately.

SetCType.

FUNCTION

AskClype - inquire the current game port controller type

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gamaport.device/AskCType

| Dec 3 17:04 1985 ra | rawinput.doc Page 13 | Dec 3 17:04 1985 rawinput.doc Page 14 |
|--|--|---|
| gamaport.device/Clear | gameport.device/Clear | gameport.device/Open |
| NAME Clear - clear | Clear - clear gameport imput buffer | NAME Open - a request to open the GamePort device |
| FUNCTION Remove from the input satisfy read requests | ION Remove from the input buffer any gameport reports waiting to satisfy read remests. | SYNOPSIS OpenDevice ("gamsport.device", unit, iCRequest, 0) |
| 10 REQUEST 10 Message 10 Device 10 Unit 10 Command 10 Flags | m. ReplyFort set if quick I/O is not possible preset by the call to OpenDevice preset by the call to OpenDevice CMD_CLEAR IOB_QUICK set if quick I/O is possible | FUNCTION The open routine grants access to a device. There are two fields in the iCRequest block that will be filled in: the IO_DEVICE field and the IO_UNIT field. The device open count will be incremented. The device cannot be expunged unless this open is matched by a Close device. |
| | | IMPUTS unit - 0 unit associated with left game port controller 1 unit associated with right game port controller |
| | | RESULTS If the open was unsuccessful, IO_ERROR will be set, IO_UNIT and IO_DEVICE will not be valid. |
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gamaport.device/SetCIype This command sets the type of device at the game port, so that the signals at the port may be properly interpreted. The port can also be turned off, so that no reports are generated. mn_ReplyPort set if quick I/O is not possible preset by the call to OpenDevice preset by the call to OpenDevice GPD_SETCTYPE the address of the byte variable describing the controller type, as per the equates in the gameport include file 108_QUICK set if quick I/O is possible SetClype - set the current game port controller type This command always executes immediately. gameport.device/SetCType IO REQUEST
LO_Message
Lo_Device
Lo_Unit
Lo_Command
Lo_Flags
Lo_Length
Lo_Data

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the x and y values for this report, in either relative or absolute device dependent units.

only the relative and button bits are set

ie_Qualifier

ie_Code

le X, le Y

contains any gameport button reports. report is indicated by the value Oxff.

not as a standard timestamp, but as the frame count in the TV_SECS field.

le_TimeStamp
the delta time since the last report,
the delta time since the last report,

given

SEE ALSO gamsport.device/SetCType, gamsport.device/SetTrigger

| | • |
|--|--|
| gamaport.device/SetTrigger | Input.device/AddHandler |
| NAME SetTrigger - set the conditions for a game port report | NAME Additandler - add an imput handler |
| FUNCTION This cormand sets what conditions must be met by a game port unit before a pending Read request will be satisfied. These conditions, called triggers, are independent that any one occurs is sufficient to queue a game port report to the Read queue. These conditions are inquired with | FUNCTION Add a function to the list of function to the list of function to the list of the light events generated by this deras as newImputEvents = Handler(Imput D0 |
| AskTrigger. This command always executes immediately. | |
| | 10_Lifetice preset by OpenDevi 10_Unit preset by OpenDevi 10_Command IND_ADDHANDLER 10_Data a pointer to an in is_Data the handlerData pointer to an income. |
| | pt st comma |
| GTB_DOWNCEYS set if button down transitions trigger a report, and GTB_UPKEYS set if button up transitions trigger a report gpt_Inmout = a time which, if exceeded, triggers a report; measured in vertical blank units (60/sec) gpt_XDelta = a distance in x which, if exceeded, triggers a report gpt_XDelta = a distance in x which, if exceeded, triggers a report a distance in x which, if exceeded, triggers a report | |

| put.device/AddHandler | NAME AddHandler - add an imput handler to the device | FUNCTION Add a function to the list of functions called to handle input events generated by this device. The function is called as newinputEvents = Handler(inputEvents, handlerData); D0 A1 | 10 REQUEST 10 Message mn.ReplyFort set 10 Device preset by OpenDevice 10 Unit preset by OpenDevice 10 Command a pointer to an interrupt structure. 11 | ot st |
|-----------------------|---|---|--|-------|
| ā . | | 144 | - | 4 |
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| imput.device/Clear | | 0 | possible | |
|----------------------------|----------------------------|---|--|--|
| | imput buffer | ION Remove from imput buffers any imput reports waiting to satisfy read requests. | mr_ReplyPort set if quick I/O is not possible preset by the call to OpenDevice preset by the call to OpenDevice CMD_CIEAR IOB_QUICK set if quick I/O is possible | |
| irput.device/Clear NAME | Clear - clear input buffer | FUNCTION Remove from input buff satisfy read requests. | IO REQUEST io_Message io_Device io_Unit io_Command io_Flags | |

| Dec 3 17:04 1985 rawimput.doc Page 20 |
|--|
| Imput.device/Open |
| NAME Open - a request to open the imput device |
| SYNOPSIS OpenDevice ("imput.device", 0, iORequest, 0) |
| FUNCTION The open routine grants access to a device. There are two fields in the iORequest block that will be filled in: the IO_DEVICE field and the IO_UNIT field. |
| The device open count will be incremented. The device cannot be expunged unless this open is matched by a Close device. |
| RESULTS If the open was unsuccessful, IO_ERROR will be set, IO_UNIT and IO_DEVICE will not be valid. |

| input.device/Reset | Reset - reset the input NON Reset resets the keyboard device without destroying handles to the open device. | em.ReplyPort set if quick I/O is not possible preset by the call to OpenDevice preset by the call to OpenDevice CMD_RESET 108_QUICK set if quick I/O is possible | | |
|----------------------------|--|--|--|--|
| irput.device/Reset NAVE | Reset - reset the 1 FUNCTION Reset resets the ke to the open device. | 10 REQUEST 10 Message 10 Device 10 Unit 10 Command 10 Flags | | |

irput.device/Remiandler

FUNCTION
Remove a function previously added to the list of handler functions.

NAME Remisandler - remove an imput handler from the device

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imput.device/Remiandler

| Input.dwilon/Saciding West Section 1 and |
|--|
| input.device Page 23 It the current mouse port WAS Setfining - set the conditions for a mouse port reg FUNCTION MAS Setfining - set the conditions must be mat by a FUNCTION FUNCT |
| input.doc Page 23 input.device/SetMort NAVE SetMing - set the conditions for a mouse port reg FUNCTION This command sets what conditions must be met by a purport device. The command sets what conditions must be met by a purport device of person by the call to OpenNovice of Page 20, that make by the call to OpenNovice of Page 20, that make 10 to OpenNovice of Page 20, that make 20, that m |
| input.doc Page 23 input.device/SetMort NOW SetMing - set the conditions for a mouse port reg FONTION This command sets what conditions must be mat by a purport device. The command sets what conditions must be mat by a purport device. The command sets what conditions must be mat by a purport device. The command sets what conditions must be mat by a before a pending shad request this action of pending to present by the call to OpenNowloo. The command sets what conditions must be mat by a before the conditions must be mat by a before the set of the command sets what conditions must be mat by a purport device. The command sets what conditions must be mat by a before the set of the command sets what conditions must be mat by a purport device. The command sets what conditions must be mat by a purport device. The command sets what conditions must be mat by a purport device. The command sets what conditions must be mat by a purport device. The command sets what conditions must be mat by a purport device. The command sets what conditions must be mat by a purport device. The command sets what conditions must be mat by a purport device. The command sets what conditions must be mat by a purport device. The command sets what conditions must be mat by a purport. And the part of the mat by a part of the part of the mat by a part of the mat by a part of the part of the mat by a part of the part of the mat by a part of the mat by a part of the part of the mat by a part of the part of the mat by a part of the mat by a part of the part of the mat by a part of the part of the mat by a part of the mat |
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| Almput.doc Page 23 Limput.device/SetMPort Limput.device/SetMTrig NAME SetMTrig - set the conditions for a mouse port rep FUNCTION This command sets what conditions must be met by a |
| Airput.doc Page 23 input.device/SetMPort t the current mouse port t the current mouse port sets the gamaport port at which the mouse is Dec 3 17:04 1985 rawinput.doc Page 24 input.device/SetMTrig Input.device/SetMTrig SetMTrig - set the conditions for a mouse port rep FUNCTION This command sets what conditions must be met by a |
| Airpout.doc Page 23 Imput.device/SetMTrig t the current mouse port EUNCTION This command safe what conditions must be ment to man to must be must be must be must be must be man to must be must be must be many to must be m |
| Wirput.doc Page 23 Liput.device/SetMort Input.device/SetMTrig NAME SetMTrig - set the conditions for a mouse port rep FUNCTION |
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| 2 17.04 1005 month day 3 22 |
| |

imput.device/SetMirig

| SetPeriod - set the key repeat period FUNCTION This command always executes immediately. This command always executes immediately. TO REQUEST - a timerequest LO-Bessage m-Repulser LO-Linit present by the call to OpenDevice LO-Command IND_SETPERIOD LO-Elage IND_SETPERIOD Lo-Elage IND_SETPERIOD Lo-Elage IND_SETPERIOD Lo-Ly-Sees the repeat period seconds Lo-Ly-Sees the repeat period microseconds | imput.device/SetPeriod | irput.device/SetPeriod |
|--|-------------------------|--|
| mand sets the period at which a repeating key repeats. a timerquest a timerquest preset by the call to OpenDevice preset by the call to OpenDevice preset by the call to OpenDevice in IOB_QUICK set if quick I/O is possible cs the repeat period seconds cro the repeat period microseconds cro the repeat period microseconds | SetPer1od | ot the key repeat period |
| mand always executes immediately. a timerequest be preset by the call to OpenDevice in IND_SETPERIOD is 108_QUICK set if quick I/O is possible is the repeat period seconds cro the repeat period microseconds | FUNCTION This command a | ets the period at which a repeating key repeats. |
| a timerequest by the call to OpenDevice by the call to OpenDevice und IND_SETPERIOD IND_SETP | This command a | llways executes immediately. |
| | අදී දී දී දී | request mr.ReplyPort set if quick I/O is not possible preset by the call to OpenDevice preset by the call to OpenDevice IND_STPERIOD 10B_QUICK set if quick I/O is possible the repeat period seconds the repeat period microseconds |
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input.device/SetMType

mm.ReplyPort set if quick I/O is not possible preset by the call to OpenDevice preset by the call to OpenDevice IND_SETMIYPE IOB_QUICK set if quick I/O is possible

IO REQUEST
Lo_Message
Lo_Message
Lo_Mit
Lo_Umit
Lo_Command
Lo_Flags
Lo_Length
Lo_Data

FUNCTION
This command sets the type of device at the mouse port, so the signals at the port may be properly interpreted.

SetMType - set the current mouse port controller type

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Input.device/SetMIype

the address of the byte variable describing the controller type, as per the equates in the gameport include file

| Dec 3 17:04 1985 rawinput.doc Page 28 Imput.device/Start imput.device/Start | NAME Start - restart after stop | To REQUEST 10 REQUEST 10 Message 10 Mes |
|---|---|--|
| Dec 3 17:04 1985 rawinput.doc Page 27 Dec input.device/SetThresh input.device/SetThresh input.device/SetThresh | NAME SetThresh - set the key repeat threshold | s command seets the time that a key must be held down before an repeat. The repeatability of a key may be restricted for example, are the shift keye). s command always executes immediately. T - a timerequest mr.MaplyPort set if quick I/O is not possible present by the call to OpenDavice hit present by the call to OpenDavice hit present by the call to OpenDavice in STTHEREN IND.STTHEREN IND.STTHEREN IS seconds the threshold seconds the threshold microseconds "Widto the threshold microseconds |

Dec 3 17:04 1985 rawinput.doc Page 30 input.device/WriteEvent mm_ReplyPort set if quick I/O is not possible preset by the call to OpenDevice preset by the call to OpenDevice IND.MRITEFVENT IOB_QUICK set if quick I/O is possible the size of the io_Data area in bytes: there are sizeof(inputEvent) bytes per input event. a buffer area with input events(s). The fields of the input event are: links the events together, the last event has a zero is NextEvent. WriteEvent - propagate input event(s) to all handlers NOTES

The contents of the input event(s) are destroyed. Dec 3 17:04 1985 rawinput.doc Page 29 16_Code 16_Qualifier 16_X, 16_Y 16_TimeStamp 1e_NextEvent input.device/WriteEvent le_SubClass to Message to Device 1o_Command to_Flags to_Langth to_Unit 10 Data IO REQUEST FUNCTION - B-65 -

•

keyboard.device/AddResetHandler The interrupt structure is kept by the keyboard device until a RemResetHandler command is satisfied for it. Add a function to the list of functions called to clean up a pointer to an interrupt structure. the handlerData pointer described above the Handler function address AddResetHandler - add a reset handler to the device m_ReplyPort set preset by OpenDevice preset by OpenDevice KBD_ADORESETHANDLER before a hard reset: Handler(handlerData); Al keyboard.device/AddResetHandler is_Data is_Code io Message lo Device lo Unit lo Command lo Data IO REQUEST FUNCTION

| keyboard.device/Clear | | ansitions waiting to | K I/O is not possible embevice /O is possible | | | | |
|---------------------------------|--------------------------------------|--|--|------|--|--|--|
| rawinput.doc Page 31 sar | Clear - clear keyboard input buffer. | HION Remove from the input buffer any keys transitions waiting to satisfy read requests. | mn.ReplyPort set if quick I/O is not possible preset by the call to OpenDevice CMD_CLEAR IOB_QUICK set if quick I/O is possible | | | | |
| 3 17:04 1985 pard.device/Clo | NAME Clear - clear | FUNCTION Remove from th | IO REQUEST To Pleasage to Device to Command to Flags | | | | |
| long Bec | Z | <u>. </u> | Ä | _ R_ | | | |

| keyboard.device/ReadEvent | keyboard.device/ReadEvent |
|---|--|
| NAME ReadEvent - return the next keyboard event. | keyboard event. |
| FUNCTION Read raw keyboard events from the keyboard and put them 1 data area of the iORequest. If there are no pending keyt events, this command, will not be satisfied, but if there some events, but not as many as can fill IO_LENCIH, the request will be satisfied with those currently available. | TON Read raw keyboard events from the keyboard and put them in the data area of the lORequest. If there are no pending keyboard events, this command, will not be satisfied, but if there are some events, but not as many as can fill IO_LENCTH, the request will be satisfied with those currently available. |
| 10 REQUEST 10_Message mn_ReplyPort set if quick I/O is not lo_Device preset by the call to OpenDevice lo_Command KBD_READEVENT 10_Flags 10B_QUICK set if quick I/O is possib to_Length the size of the io_Data area in byte are sizeof(inputEvent) bytes per inp a buffer area to fill with input event are: fields of the input event are: links the events returned ie_Class 1s_IECLASS_RAWEY 1e_Code contains the next key up/down report ie_Qualifier only the shift and numeric pad bits ie_Qualifier 1e_SubClass, ie_X, ie_X; ie_TimeStamp are not used, and set to zero RESULTS This function sets the error field in the IORequest, the IORequest with the next keyboard events (but not events). | io_Message mn_ReplyPort set if quick I/O is not possible jo_Device preset by the call to OpenDevice preset by the call to OpenDevice io_Command KBD_READEVENT io_Flags the size of the io_Deta area in bytes: there are sizeof(inputEvent) bytes per input event. a buffer area to fill with input events. The fields of the input event are: io_Deta a buffer area to fill with input event. Includes of the input event are: io_Deta a buffer area to fill with input event. The fields of the input event are: io_Deta a buffer area to fill with input event. The fields of the input event are: io_Deta are sizeof(inputEvent) bytes per input event. Inks the events returned io_Class is_IECLASS_RAWEY io_Command io_Class is_IECLASS_RAWEY io_Class io_Class |
| | |

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keyboard.device/ReadMatrix mn_ReplyPort set if quick I/O is not possible preset by the call to OpenDevice KBD_READWARIX
IOB_QUICK set if quick I/O is possible the size of the io_Data area in bytes: this must be big emough to hold the key matrix. a buffer area to fill with the key matrix: a a buffer area to fill with the key matrix: an array of bytes whose component bits reflect each keys state: the state of the key for keycode n is at bit (n MOD 8) in byte (n DIV 8) of this matrix. This function sets the error field in the IORequest, and sets matrix to the current key matrix. This function reads the up/down state of every key in the ReadMatrix - read the current keyboard key matrix Dec 3 17:04 1985 rawinput.doc Page 33 onyboard.device/Readfatrix IO REQUEST to Message to Device to Command to Flags to Length key matrix. 10 Data FUNCTION RESULTS

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keyboard.device/RemResetHandler

keyboard.device/RemResetHandler

NAME

RemResetHandler - remove a reset handler from the device

Remove a function previously added to the list of handler functions.

FUNCTION

m_ReplyPort set IO REQUEST
io_Message
io_Device
io_Unit
io_Command
io_Data

preset by OpenDevice preset by OpenDevice KBD_REMRESETHANDLER a pointer to the handler interrupt structure.

- B-67

| NAME ResetHandlerDone - indic FUNCTION Indicate that reset clear completed. TO REQUEST io_Message mn_Reply io_Device preset by io_Lowand RPR RESET io_Data a pointer |
|--|
|--|

losyboard.device/Reset

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mn.ReplyPort set if quick I/O is not possible preset by the call to OpenDevice CMD_RESET IOB_QUICK set if quick I/O is possible

10 REQUEST fo.Message to.Device to.Command to.Flags

FUNCTION
Reset resets the keyboard device without destroying handles
to the open device.

NAME Reset - reset the keyboard

losyboard.device/Reset

Dec 3 17:04 1985 rawinput.doc Page 37 - B-69 -

| NWE NOTIO MONTHO MONTHO MONTHO MONTHO MONTHO MONTHO MONTHO MIS function aborts the specified I/O request FUNCTION This function aborts the specified read or write request is request is active, it is stopped immediately. If the request is MONTHOUS MONTHOUS MENUTS | Dec 3 17:04 1985 serial.doc Page 2 |
|--|---|
| Photographic Programme Pro | |
| 2 423 00 | NAME AbortIO abort the specified I/O request |
| 9 9 | FUNCTION This function aborts the specified read or write request. If the request is active, it is stopped immediately. If the request is queued, it is painlessly removed. |
| 9 | Request |
| | 9 |
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serial.device/Ser

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serial.device/BeginIO

FUNCTION

device. Other than read or write, the functions are performed synchronously, and do not depend on any interrupt handling logic (or it's associated discontinuities), and hence, if so selected, can be performed as IO_QUICK. This function initiates a I/O request made to the serial BeginIO -- start up an I/O process

With one exception, reads and writes are merely initiated by Beginlo, and thusly return to the caller as begun, not completed. Completion is signalled via the standard ReplyMsg routine. Multiple requests are handled via FIFO queueing. The only exception to this non-QUICK handling of reads and writes

- IO_QUICK bit is set is for READS when:

There are no pending read requests

- There is already enough data in the input buffer to satisfy this I/O Request immediately.

In this case, the IO_QUICK flag is not cleared, and the request is completed by the time it returns to the caller. There is no ReplyMsg or signal bit activity in this case.

INPUTS

as well as the command's other required parameters.

deviceNode -- pointer to the "serial.device" node built at 1ORequest -- pointer to an I/O Request Block of size 1o_ExtSerSize (see serial.1 for size/definition), containing a valid command in 1o_Command to process, init, and put into io_Device at Open.

RESULTS

Error. -- if the BeginIO succeded, then Error will be null.

If the BeginIO failed, then the Error will be non-zero.

Most I/O errors won't be reported until the ReplyMsg.

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serial.device/Break

serial.device/BeginIO

serial.device/Break

Break -- send a break signal over the serial line

for an extended period) out the serial port. This is accomplished by setting the UNYTERK bit of reg ADKCON. After a duration (user specifiable via setparams, default 25000 microseconds) the bit is reset and the signal discontinued. If the QUEUEDERK bit of 10_SerFlags is set in the 10_Request block, the request is placed at the back of the write-request queue and executed in turn. If the QUEUEDERK bit is not set, the break is started immediately, control returns to the caller, and the timer discontinues the signal after the duration is completed. It is up to the caller to co-ordinate his/her intentions with the proper commands such as ABCRT, FLUSH, STOP, START, etc... This function sends a break signal (serial line held low

IO REQUEST

mn_ReplyPort initialized set by OpenDevice set by OpenDevice 10 Message 1o_Command to Device to_Unit

RESULTS

to Flags

Error -- if the Break succeded, then Error will be null. If the Break failed, then the Error will be non-zero.

set/reset IO_QUICK per above description

- B-72

| | | | | • | |
|---------------------------------------|---|---|-----------------------|-------------|---------------------|
| serial.device/Close NAVE | device/Close Close close the serial port | ial port | | erial. | serial.device/Closs |
| SYNCPSIS | SYNOPSIS CloseDevice (deviceNode) | · • | | | |
| FUNCTION This functing | nction closes ; , the device's | FUNCTION This function closes software access to the serial device. Upon closing, the device's input buffer is freed. | to the serials freed. | l device. U | g S |
| INPUTS | ode - pointer (| INPUTS deviceMode - pointer the device node, set by Open | , set by Open | | |
| SER ALSO sertial. | ALSO serial device/Open | | | | |
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serial.device/Flush

NAVE

Flush -- clear all queued I/O requests for the serial port

Flush function purges the read and write requests

Shall device.Flush will not affect active requests.

10 REQUEST

10 REQUEST

10 DESCRIPTION

11 The Flush failed, then the Error will be non-zero.

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Sorial.device/Open

NAME

Open -- a request to open the serial port

SYNOPSIS

OpenDevice (sername, unit, loRequest, flags)

FUNCTION

This function allows the requestor software access to the serial device. Unless the shared-access bit (bit 5 of 10_SerTelags) is set, exclusive use is granted and no other access is allowed until the owner closes the device. All serial-specific fields are initialized to their most recent values (or default, if the first time open). OpenDevice initializes the io_Device and lo_Unit fields to 0, since there is only one serial device/unit. If the user wants to support 7-wire handshaking (i.e. RS332-C CIS/RTS protocol), he should set the 7MRE bit before opening.

INPUTS

Sername - pointer to literal string "serial.device"

Lignored

LoRequest - Deinter to an loRequest block of size lo_ExtSerSize

(see serial.i.h for size/definition) to be initialized by the OpenDevice routine.

MOTE use of lo_SerFlags (see FUNCTION above)

#@CX! INPORTANT !!! LoRequest block MUST (!!) be of size lo_ExtSerSize !!!

RESULTS

| usc 3 17:04 1505 | NAME Read read | EUNCTION This function serial port. unless -1 is is received. | input buffer IO REQUEST Io_Message io_Device | 10_Command 10_Flags 10_Flags | 10_Data RESULTS Error 1f | If the R | · | |
|--|--|---|--|---------------------------------------|---|----------|---|--|
| Dec 3 17:04 1985 serial.doc Page 9 serial.device/Query | NAME Query query serial port/line status | FUNCTION This function return the status of the serial port lines and registers. The number of unread bytes in the serial device's read buffer is shown in io_Actual. | IO REQUEST Lo_Message mn_ReplyPort initialized Lo_Device set by OpenDevice Lo_Unit set by OpenDevice Lo_Command SDCMO_QUERY (0A) | RESULTS 10_Status BIT ACTIVE FUNCTION | LSB 0 low reserved 1 low reserved 2 low reserved 3 low Data Set Ready 4 low Clear To Send | | lo Actual set to count of unread input characters | Error if the Query succeded, then Error will be non-zero. If the Flush failed, then the Error will be non-zero. |

NAME

Read -- read input from serial port

FUNCTION

This function causes a stream of characters to be read in the serial port. The number of characters is specified in io_Length, unless -1 is used, in which case input is read until an mull(0x00) is received. Input for which there is no request is stored in the input buffer until it can be dispatched to a requestor.

IO REQUEST

IO Message mr.ReplyPort initialized io_Device set by OpenDevice set by OpenDevice of to_Length io_Length io_length

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serial.device/Reset This function resets the serial port to its freshly initialized condition. It aborts all I/O requests both queued and current, relinquishes the current buffer, obtains a new default sized buffer, and sets the port's flags and parameters to their boot-up time default values. The functions places the reset If the Reset failed, then the Error will be non-zero. Error -- if the Reset succeded, then Error will be null. mn.ReplyPort initialized set by OpenDevice set by OpenDevice CMD_RESET parameter values in the lokequest block. Reset -- reinitializes the serial port Dec 3 17:04 1985 serial.doc Page 11 serial.device/Reset 10 Message 10 Command 10 Device io_Unit IO REQUEST RESULTS

serial.device/SetParams checks for parity, x-OFF handling, character lengths other than 8 bits, and testing for a break signal. Setting RAD_BOCGIE will also set the XDISABLED bit.

Note that writing data (that's already in MIDI format) at MIDI rates is easily accomplished. Using this driver alone for MIDI reads may, however, be inappropriate, due to MIDI timestamping requirements, to reflect the serial device's current configuration. If trying to run MIDI, it is suggested to set the RAD_BOCCIE bit of io_SerFlags to bypass unneeded overhead. Specifically, this skips Valid input for io_Baud is between 112 and 292000 baud inclusive; and possibility of overruns in a busy multitasking and/or display - that the following fields are filled in by Open The ECFNODE and QUEUEDERK bits of io_SerFlags can be set/reset RBuffen must be at least 512.

lo_ExtFlags is not used in VI.1, and MUST be set to zero to assure upward compatibility.

xON-xOFF is by default enabled. The XDISABLED bit is the only parameter that can be changed via a SetParams call while the device is active. Note that this vill return the value serErr_DevBusy in the lo_Error field. asynchronous 1/o above 32KB (especially on a busy system) may This function allows the caller to change parameters for the serial device. Except for xON-xOFF enable/disable, it will reject a setparams call if any reads or writes are active in the lo_Rqst block without a call to SetParams. The SHARED and 7WIRE bits of lo_SerFlags are used in OpenDevice calls. ALL OTHER PARAMETERS CAN OWLY BE CHANGED BY THE SetParams that any change in buffer size causes the current buffer to be deallocated and a new, correctly sized one to be allocated. Thusly, the CONTENIS OF THE OLD BUFFER ARE LOST. baud rate for reads AND writes. (See 1 above) a longword containing byte values for the xON, xOFF, INQ, ACK fields (respectively) (INQ/ACK not used at this time) SetParams -- change parameters for the serial port length in bytes of input buffer mn_ReplyPort initialized SDCMD_SETPARAMS (0x0B) set by OpenDevice set by OpenDevice (not used) intensive environment. Note specifically: COMPAND. (1111) be ambitious. or pending. io_ExtFlags to_Message lo_Command to RBuffen 10_CtlChar lo Device lo_Unit IO REQUEST lo_Baud FUNCTION ٠ ROTE

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serial.device/SetParams

| Dec 3 17:04 1985 serial.doc Page 14 NAME Start restart paused I/O over the serial port Start restart paused I/O over the serial port EUNCTION This function restarts all current I/O on the serial port by sending an XOM to the "cher side", and submitting a "logical xOM" to "our side", if/when appropriate to current activity. IO REQUEST io_Message mc_ReplyPort initialized io_Duice set by OpenDevice io_Unit set by OpenDevice i |
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| Dec 3 17:04 1985 serial.doc Page 15 | Dec 3 17:04 1985 serial doc Pare 16 |
|--|---|
| | |
| serial.device/Stop | serial.device/Arite |
| NAME Stop pause all current I/O over the serial port | NAME Write send output to serial nort |
| FUNCTION This function halts all current I/O on the serial port by sending an xOFF to the "other side", and submitting a "logical xOFF" to "our side", if/when appropriate to current activity. | FUNCTION This function causes a stream of characters to be written out the serial port. The number of characters is specified in |
| IO REQUEST | a null(0x00) is encountered. |
| 10_Devices set by OpenDevice 10_Unit set by OpenDevice 10_Unit set by OpenDevice 10_Command CPD_STOP | |
| RESULIS Error if the Stop succeded, then Error will be null. If the Stop failed, then the Error will be non-zero. | 10_Command OnD_WRITE 10_Flags IOF_QUICK set if quick I/O possible and desired 10_Length number of characters to transmit, or if set |
| SEE ALSO | io_Data pointer to block of data to transmit |
| Sed 1al. GBV108/SCarr | RESULTS Error if the Write succeded, then Error will be mull. If the Write failed, then the Error will be non-zero. |
| | SEE ALSO serial.device/BeginIO, serial.device/setParams |
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| Dec 4 09:16 1985 timer.Doc Page 2 |
|---|
| timer.device/AddTime |
| NAME AddIims - add one time request to another |
| SYNOPSIS AddTime(Dest, Source), timer.device A0 A1 A6 |
| FUNCTION This routine adds one timewal structure to another. The results are stored in the destination (Dest + Source -> Dest) |
| A0 and A1 will be left unchanged |
| INPUTS Dest, Source pointers to timeval structures. |
| EXCEPTIONS |
| SEE ALSO |
| BUCS |
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| |

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timer device/AddTime timer device/background timer device/CmpTime timer device/SubTime timer device/TR_ADDREQUEST timer device/TR_CETSYSTIME timer device/TR_SETSYSTIME

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| 70 | timer.device/CmpTime | |
| | NAME CmpTime - Compare two timewal structures | |
| | SYNOPSIS result = CmpTime(Dest, Source), timer.device A0 A1 A6 | |
| | FUNCTION This routine compares two timewal structures. | |
| | A0 and A1 will be left unchanged | |
| | INPUTS Dest, Source pointers to timewal structures. | |
| | RESULTS result = 0 if Dest has the same time as Source result = -1 if Dest has less time than Source result = +1 if Dest has more time than Source | |
| | EXCEPTIONS | |
| | SEE ALSO | |
| | BUCS | |
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| 4 09:16 1965 timer.Doc Page 6 | timer.device/TR_ADDREQUEST timer.device/TR_ADDREQUEST NAME | TR_ADDREQUEST submit a request to time time TION Ask the timer to count off a specified amount of time. The timer will chain this request with its other requests, and will reply the message back to the timer than the timer counts from the zero. | INER REQUEST io_Message mr_ReplyPort initialized io_Device preset by timer in OpenDevice io_Unit preset by timer in OpenDevice io_Command TRADDREQUEST io_Command TRADDREQUEST io_Flags IOE_QUICK allowable tr_time a timeval structure specifiy how long until the driver will reply | : Îmo | |
|-----------------------------------|--|--|---|-----------------|--|
| Dec 4 09 | timer.dev | FUNCTION PASK | I INTERPRETATION | RESULTS tr_1 | |
| | timer.device/SubTime | request from another er.device | This routine subtracts one timeval structure from another. The results are stored in the destination (Dest - Source -> Dest) An and Al will be left unchanged S Dest, Source pointers to timeval structures. | | |
| Dec 4 09:16 1985 timer.Doc Page 5 | timer.device/SubTime | NAME SubTime - subtract one time request from another SYNOPSIS SubTime(Dest, Source), timer.device A0 A1 A6 | FUNCTION This routine subtracts one timeval structure fr results are stored in the destination (Dest - S A0 and A1 will be left unchanged INPUTS Dest, Source pointers to timeval structures. EXCEPTIONS | SER ALSO | |

| Dec 4 09:16 1985 timer.Doc Page 8 | timer.device/IR_SETSYSTIME | NAME TR SETSYSTIME set the system time | FUNCTION Set the systems idea of what time it is. The system starts out at time "acto" so it is safe to set it forward to the "real" time. However care should be taken when setting the time backwards. System time is speced as being monotonically increasing. THER REQUEST IO. Message m. ReplyFort initialized IO. Davide preset by timer in OpenDevice IO. Lowide preset by timer in OpenDevice IO. Command IR. ADDREQUEST IO. East of the system IV. Lime a timeval structure with the current system time RESULTS none | |
|-----------------------------------|----------------------------|---|---|--|
| Dec 4 09:16 1985 timer.Doc Page 7 | timer.device/TR_CETSYSTIME | NAME IR_CEISYSTIME get the system time | And the timer what time it is. The system time starts off at zero at power on, but may be initialized via the TR_SETSTRING call. System time is monotonically increasing, and guaranteed to be unique (except of someone sets the time backerds). The time is incremented every vertical banking interval; in addition it is changed every time someone asks what time it is. This way and unrepeating. TIMER REQUEST to Message in ReplyCort initialized to Device preset by timer in OpenDevice to Louis preset by timer in System time the current system time | |

| Dec 4 09:14 1985 translator.doc Page 2 |
|---|
| loses the library |
| SYNOPSIS CloseLibrary (1ibNode) |
| FUNCTION The CloseLibrary routine is called when the user no longer needs the translator library. CloseLibrary reduces the open count, and if zero and the expunge bit is on, expunges the library. |
| INPUTS 11bNode - The library node returned from OpenLibrary. |
| RESULTS |
| SEE ALSO |
| |
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| |
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| |

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translator.library/Close translator.library/Open translator.library/Translate

TABLE OF CONTENTS

translator.library/Open The open routine grants access to the translator library and returns the library node. The name "TranslatorPase" must be used and it must be declared to be external and long. OpenLibrary - Grants access to the translator library libNode - This must be called "TranslatorBase" and libNode = OpenLibrary ("translator.library", 0); library name - "translator.library" Dec 4 09:14 1985 translator.doc Page 3 declared as extern long. translator.library/Open version SYNOPSIS FUNCTION SEE ALSO RESULTS INPUTS

Dec 4 09:14 1985 translator.doc Page 4

translator.library/Translate

NAME:

translator.library/Translate

Translate - Converts an English string into phonetics

SYNOPSIS rtnCode = Translate(instring, inlen, outbuf, outlen)

FUNCTION

The translate function converts an English string into a string of phonetic codes suitable as imput to the narrator device.

INPUTS

instring - pointer to English string inlen - length of English string outbuf - a char array which will hold the phonetic codes outlen - the length of the output array

RESULTS

Translate will return a zero if no error has occured. The only error that can occur is overflowing the output buffer. If Translate determines that an overflow will occur, it will stop the translation at a word boundary before the overflow happens. If this occurs, Translate will return a negative number whose absolute value indicates where in the INPUT string Translate stopped. The user can then use the offset -rtnCode from the beginning of the buffer in a subsequent Translate call to continue the translation where s/he left off.

SEE ALSO

- B-87 -

Appendix C

Resource Summaries

Resources are software entities in the Amiga Kernel software that enable cooperating tasks to gain exclusive access to certain parts of the Amiga hardware.

There are four resources in the Amiga system:

disk allows access to one of four possible disk units.

cia allows you to access specific bits in each of the Complex Interface Adaptors.

potgo manages the bits of the POTGO register.

misc manages the serial and parallel port register bits.

Each routine for resource management is outlined in the summary sections that follow.

NOTE: Resources need only be used if a user is attempting to use the associated hardware directly. The system software routines utilize these resources internally when they perform hardware operations. Tasks that also utilize these software resource controls will be compatible with Exec and the system software.

To utilize the routines listed for the resources, as with libraries, you must first open the resource and assign the value returned to a specific base pointer name. Here is a list of the resource names and their associated base pointer names. As with libraries, the name is a null-terminated string:

Resource Name Base Pointer Name

potgo.resource

PotgoBase

disk.resource -

none provided, for asm language

programmers only

none provided, for asm language

programmers only

ciaa.resource

misc.resource

<user-defined> <user-defined>

Examples:

struct Library *PotgoBase;
PotgoBase = (struct Library *)OpenResource("potgo.resource");
/* then use the routines provided */
....

/* <user-defined > example */
struct Library *myCiaPointerA;

myCiaPointerA = (struct Library *)OpenResource("ciaa.resource");

/* then utilize myCiaPointerA as one of the explicit parameters

* for the C language calls to the resource routines. */

cia.resource/AbleiCR resource - pointer to claa.resource or clab.resource as obtained from the call to OpenResource This function provides a means of enabling and disabiling 8520 CIA interrupt control registers. In addition it returns the previous enable mask. oldMask - the previous enable mask before the requested changes. To get the current mask without making changes, call the function with a null parameter. Enabling the mask for a pending interrupt will cause an immediate processor interrupt (that is if everything else is enabled). You may want to clear the pending mask - a bit mask indicating which interrupts to be modified. If bit 7 is clear the mask indicates interrupts to be disabled. If bit 7 is set, the mask indicates interrupts to be enabled. Bit positions are identical to those in 8520 ICR. interrupts with SetICRx prior to enabling them. AbleICR -- enable/disable ICR interrupts mask) D0 Disable serial port interrupt: AbleICR(0x08) Enable both timer interrupts: oldMask = AbleICR (Resource, D0 A6 Dec 10 11:55 1985 cia.doc Page 2 Get the current mask: mask = AbleICR(0) AbleICR (0x83) cia.resource/AbleICR ALSO SetiCR EXCEPTIONS SYNOPSIS FUNCTION RESULTS SEE NAME These correspond to the first and second 8520 in the system. See the software memory map for the definition of the bits that each cla controls. Note: There are two cla.resources: claa.resource, and clab.resource. Dec 10 11:55 1985 cla.doc Page 1

cla.resource/AddICRVector cla.resource/RemICRVector cla.resource/SetICR cia.resource/AbleiCR TABLE OF CONTENTS

Disconnect interrupt processing code for a particular interrupt bit of the CIA ICR. This function will also disable the CIA interrupt for the given RemICRVector -- detach an interrupt handler from a CIA bit iCRBit - bit number to set (0..4)
interrupt - pointer to interrupt structure
resource - pointer to claa.resource or clab.resource as
obtained from the call to OpenResource iCRBit, interrupt) D0 A1 Dec 10 11:55 1985 cia.doc Page 4 RemICRVector (resource, cia.resource/RemiCRVector AddICRVector ICR bit. SYNOPSYS FUNCTION SEE ALSO INPUTS RESULT cia.resource/AddICRVector This function will also enable the CIA interrupt for the given ICR bit. Assign interrupt processing code to a particular interrupt bit of the CIA ICR. If the interrupt bit has already been assigned, this function will fail, and return a pointer to the owner interrupt. If it succeeds, a null is returned. Interrupt - zero if successful, otherwise returns a pointer to the current owner interrupt structure. AddICRVector -- attach an interrupt handler to a CIA bit IGBit - bit number to set (0..4)
Interrupt - pointer to interrupt structure
resource - pointer to clas.resource or clab.resource as iCRBit, interrupt) D0 A1 obtained from the call to OpenResource interrupt = AddICRVector (resrouce, Dec 10 11:55 1985 cla.doc Page 3 cia.resource/AddICRVector SEE ALSO
RemICRVector SYNOPSYS 8 FUNCTION INPUTS RESULT

cla.resource/RemICRVector

cia.resource/SetICR EXCEPTIONS
Setting an interrupt bit for an enabled interrupt will cause an immediate interrupt. ensek - a bit mask indicating which interrupts to be effected. If bit 7 is clear the mask indicates interrupts to be reset. If bit 7 is set, the mask indicates interrupts to be caused.

Bit positions are identical to those in 8520 ICR. Bit positions denient to clear resource or clab.resource as obtained from the call to OpenResource This function provides a means of reseting, causing, and sampling 8520 CIA interrupt control registers. oldwask - the previous interrupt register status before making the requested changes. To sample current status without making changes, call the function with a null parameter. SetICR -- cause, clear, and sample ICR interrupts SYNOPSIS
oldWask = SetICR(resource, mask) Get the interrupt mask:
mask = SetICR(0)
Clear serial port interrupt:
SetICR(0x08) Dec 10 11:55 1985 cla.doc Page 5 cia.resource/SetICR AbleICR EXAMPLES SEE ALSO FUNCTION RESULTS INPUTS

disk.resource/Allochit disk.resource/Allochitt

MANE
Allochit - allocate a unit of the disk.
Success = Allochit (unithum), DRResource
Do
FUNCTION
This routine allocates one of the units of the disk. It should be called before trying to use the disk (via Cethuit).

INFUTS

Success - Allochit (unithum), DRResource
Do
FUNCTION
This routine allocates one of the units of the disk. It should be called before trying to use the disk (via Cethuit).

INFUTS

Success -- nonzero if successful. Zero on failure.

EXCEPTIONS
SEE ALSO
BUCSS

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disk.resource/Allochnit disk.resource/FreeUnit disk.resource/GetUnit disk.resource/GetUnitID disk.resource/GiveUnit

TABLE OF CONTENTS

Dec 4 09:12 1985 disk.doc Page 3

disk.resource/FreeUnit

NAME
FreeUnit - deallocate the disk

SYNOPSIS
FreeUnit(unitNum), DRResource
DO A6

FUNCTION
This routine deallocates one of the units of the disk. It should be called when done with the disk. Do not call it if you did no successfully allocate the disk (there is no protection -- you will probably crash the disk system).

INPUTS

will probably crash the disk system).

RESULTS

EXCEPTIONS

disk.resource/CetUnit

lastDriver = GetUnit(unitPointer), DRResource

SYNOPSIS

FUNCTION

CetUnit - allocate the disk for a driver

Dec 4 09:12 1985 dlsk.doc Page 4

disk.resource/CetUnit

This routine allocates the disk to a driver. It is either immediately available, or the request is saved until the disk is available. When it is available, your unitPointer is sent back to you (via ReplyMsg). You may then reattempt the GetUnit.

Allocating the disk allows you to use the disk's resources. Remember however that there are four units to the disk; you are only one of them. Please be polite to the other units (by never selecting them, and by not leaving interrupts enabled, etc.).

When you are done, please leave the disk in the following state: dmacon dma bit ON disk long want entenaidsk sync and disk block interrupts -- Both DISABLED CIA resource index interrupt -- DISABLED CIA resource index interrupt -- DISABLED 8520 outputs -- doesn't matter, because all bits will be set to inactive by the resource.

INPUTS

unitPtr - a pointer you your disk resource unit structure.
Note that the message filed of the structure MUST
be a valid message, ready to be replied to.
RESULTS

lastDriver - if the disk is not busy, then the last unit
to use the disk is returned. This may be used to
see if a driver needs to reset device registers.
(If you were the last user, then no one has changed
any of the registers. If someone else has used it,
then any allowable changes may have been made). If the
disk is busy, then a null is returned.

SEE ALSO

EXCEPTIONS

BCS

SEE ALSO

| EUCS. EUNCTION This routine frees the disk after a driver is done with it. If others are waiting, it will notify them. INCUIS EXCEPTIONS SEE ALSO BUCS |
|---|
|---|

disk.resource/OstUnitID

Dec 4 09:12 1985 disk.doc Page 5

disk.resource/CetUnitID

NAME CatUnitID - find out what type of disk is out there

FUNCTION

INPUTS

RESULIS
Adtype -- the type of the disk drive. Standard types are
defined in the resource include file.

EXCEPTIONS

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Duc 4 09:10 1985 misc.doc Page 2

misc.resource/FreeMiscResource

MAC

FreeMiscResource - make a resource available for reallocation

SYMCHICA

FreeMiscResource (unithm), DRResource

Do As

FUNCTION

This routine frees one of the resources allocated by AllocAtscResource. The resource is made available for reuses.

This routine may not be called from an interrupt routine inputs

INFURS

UNITHM - the number of the miscellareous resource to be freed.

RESULTS

SEE ALSO

BUCS

misc.resource/GetMiscResource This routine allocates one of the miscellaneous resources. If the resource is currently allocated, an error is returned. If you do get it, your name is associated with the resource (so a user can see who has it allocated). unitNum - the number of the resource you want to allocate name - a mrenonic name that will help the user figure out what piece of software is hogging a resource. (havoc breaks out if a name of null is passed in...) CurrentUser = GetMiscResource(unitNum, name), DRResource D0 $$\rm A1~A6$ CurrentUser - if the resource is busy, then the name of the current user is returned. If the resource is free, then null is returned. This routine may not be called from an interrupt routine CatMiscResource - allocate one of the misc resources Dec 4 09:10 1985 misc.doc Page 3 misc.resource/CetMiscResource EXCEPTIONS SYNOPSIS FUNCTION SEE ALSO RESULTS INPUTS SAR BUCS

potgo.resource/AllocPotBits With the left (0) controller, pin 5.

IX (bit 9) - set if you promise to use the IX port in output mode only. The port is not set to output for you at this time -- this bit set indicates that you don't mind if STARTs are initiated at any time by others, since ports that are enabled for output are unaffected by START.

IX (bit i0) - as DAILX but for the left (0) controller, pin 9. WritePotgo. The request may be for more than one bit. A user trying to allocate bits may find that they are unavailable because they are already allocated, or because the start bit itself (bit 0) has been allocated, or if requesting the start bit, because input bits have been allocated. A user can block itself from allocation: i.e. it should FreePotgoBits the bits it has and re-AllocPotBits if it is trying to change an allocation involving the start bit. bits - a description of the hardware bits that the application (bit 8) - set if you wish to use the port associated The AllocPotBits routine allocates bits in the hardware potgo register that the application wishes to manipulate via WritePotgo. The request may be for more than one bit. A START (bit 0) - set if you wish to use start (1.e. start
thr proportional controller counters) with the allocated - the START and DATXX bits of those requested that were granted. The OVTXX bits are don't cares. wishes to manipulate, loosely based on the register allocate all the DATxx ports you want to apply STARI to in this same call, with the OUTxx bit input ports you allocate (below). You must as OVILX but for LY.
the right (1) controller, pin 5.
OVT for RX. - the right (1) controller, pin 9. - OUT for RY. AllocPotBits - allocate bits in the potgo register allocated = AllocPotBits(bits), potgoResource
D0 A6 3 17:04 1985 potgo.doc Page 2 description itself: potgo.resource/AllocPotBits (bit 11) (bit 12) (bit 13) clear. (bit 14) (bit 15) OUTLX OUTLY DATRY OUTRY DATRY OUTRY DATLX DATEY SYNOPSIS FUNCTION INPUTS Z 8 Dec 3 17:04 1985 potgo.doc Page 1 potgo.resource/AllocPotBits potgo.resource/FreePotBits potgo.resource/MritePotgo LABLE OF CONTENTS

| Dec 3 17:04 1985 potgo.doc Page 4 | Es potgo.resource/MritePotgo potgo.resource/MritePotgo | NAME WritePotgo - write to the hardware potgo register | SYNOPSIS WritePotgo (word, mask), potgoResource D0 D1 A6 | FUNCTION The MritePotgo routine sets and clears bits in the hardware potgo register. Only those bits specified by the mask are affected it is improper to set bits in the mask that you have not successfully allocated. The bits in the high byte are saved to be maintained when other users write to the potgo register. The START bit is not saved, it is written only explicitly as the result of a call to this routine with the START bit set: other users will not restart it. | Word - the data to write to the hardware potgo register and save for further use, except the START bit, which is not saved. mask - those bits in word that are to be written. Other bits may have been provided by previous calls to this routine, and default to zero. |
|-----------------------------------|--|---|--|---|--|
| | potgo.resource/EreaPotBlts | go register | | ocated bits in the had allocated via t accepts the nt. | |

FUNCTION

The FreePotBits routine frees previously allocated bits in the hardware potgo register that the application had allocated via AllocPotBits and no longer wishes to use. It accepts the return value from AllocPotBits as its argument.

FreePotBits - free allocated bits in the potgo register

Dec 3 17:04 1985 potgo.doc Page 3

potgo.resource/FreePotBits

SYNOPSIS FresPotBits(allocated), potgoMesource D0 A6

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Appendix D

C Include Files—".h" Files

This appendix contains the C-language include files that define the system data structures used by the ROM (or kickstart) routines and the disk-loadable libraries.

As with the documentation files, these include-files are organized on a functional basis. In other words, things pertinent to the exec are listed under "exec/something.h", things pertinent to graphics are listed under "graphics/graphicsitem.h" and so on.

This appendix is a hard-copy of the "SYS:includes" directory on the Amiga C (Lattice C) disk.



```
Cross Reference Utility (C) 1984,1985 Commodore Amiga, Inc.

1:dictionary 6:bootblock.h 7:cia.h 8:clip.h 9:clipboard.h 10:collide.h 11:console.h 12:conunit.h 13:copper.h 14:ctype.h 15:custom.h 16:dec.h 17:devices.h 18:disk.h 19:diskfont.h 20:display.h 21:dasbits.h 22:des.h 23:desattens.h 24:errer.h 25:errors.h 26:exec.h 27:execbase.h 28:execname.h 29:fcntl.h 30:gameport.h 31:gels.h 32:gtx.h 33:gtxbase.h 34:gtxmacros.h 35:graphint.h 36:icon.h 37:input.h 36:inputsvent.h 39:intbits.h 40:interrupts.h 41:intuition.h 42:intuitionbase.h 43:io.h 44:iosl.h 45:keyboard.h 46:keymap.h 47:layers.h 48:libraries.h 49:lists.h 50:lists.h 55:macros.h 55:macros.h 55:math.f 55:math.f 55:math.f 55:math.f 55:math.h 55:math.f 55:math.h 56:parallel.h 59:ports.h 60:potgo.h 61:printer.h 62:prtbase.h 63:rastport.h 64:regions.h 65:resident.h 66:serial.h 72:timer.h 73:trackdisk.h 74:translator.h 75:types.h 76:view.h 77:workbench.h
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```



```
(1<<5)
(ADCHOE_NOUNIT+0)
                                                                                                                                                                      (CAD_NONSTD+0)
(CAD_NONSTD+1)
(CAD_NONSTD+2)
(CAD_NONSTD+3)
(CAD_NONSTD+4)
(CAD_NONSTD+4)
                                                                                                                "audio.device"
                                                                                                                                                                                                                                                              (1<<4)
                                                                                                                                                                                                                                                                             (1<<5)
                                                                                                                                                                                                                                                                                             (1<<6)
                                                                                                                                                                                                                                                                                                            (1<<7)
8 16:36 1985 devices/audio.h Page 1
                                                                                                                                                                                                                                                                                                                                                          ioa_Volume;
ioa_Cycles;
Message ioa_MriteMsg;
                                                                                                                                                                                                                                                                                                                            #define ADIOERR_NOALLOCATION
#define ADIOERR_ALLOCEALLED
#define ADIOERR_CHANNELSTOLEN
                                                                                                                                                                                                                                                   #define ADIOB_PERVOL
#define ADIOE_SYNCCYCLE
#define ADIOB_SYNCCYCLE
#define ADIOB_NOWALT
#define ADIOE_NOWALT
#define ADIOE_NOWALT
#define ADIOE_NOWALT
#define ADIOE_NOWALT
                                                                                                                                                                            #define ADCHD_FINISH
#define ADCHD_FERVOL
#define ADCHD_FERVOL
#define ADCHD_MATTCYCLE
#define ADCHD_WATTCYCLE
#define ADCHD_WATTCYCLE
#define ADCHD_MATTCYCLE
#define ADCHD_MATTCYCLE
#define ADCHD_MATTCYCLE
#define ADCHD_MATTCYCLE
                                                                                                                                #define ADHARD_CHANNELS
                                                                                                                                              #define ADALLOC_MINPREC #define ADALLOC_MAXPREC
                                                                                                                                                                                                                                                                                                                                                                                             ioa_Length;
ioa_Period;
                                                                                                                                                                                                                                                                                                                                                                                     *loa Data;
                                                                                       #include "exec/10.h"
                                                                                EXEC IO H
                                                                                                                                                                       #define ADCMD_FREE
                                                                                                                #define AUDIONAME
                                                                                                                                                                                                                                                                                                                                                                     struct
WORD
UBYTE
ULONG
UWORD
UWORD
                                                                                #1fndef
                                                                                                #end1f
                                                                                                                                                                                                                                                                                                                                                                                                                                                    #end1f
                                                                                                                                                                                                                                                                                                                                                                                                                                     ፝
                                                        Dec
```

```
#define DEVICES_CIPBOARD_H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            either clip stream or post port */
offset in clip stream */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* the length will be 6 */
/* which clip unit this is */
/* the clip identifier of the post */
                                                                                                                                                                                                                                                                                                                                                                                                                                  t Davice %10_Davice; /* device node pointer */
t Unit *10_Unit; /* unit (driver private)*/
to_Command; /* device command */
to_Elags; /* including QUICK and SATISFY */
to_Error; /* error or warning num */
to_Actual; /* number of bytes transferred */
to_Length; /* number of bytes requested */
to_Length; /* either clip stream or post port */
to_Offset; /* offset in clip stream */
to_ClipID; /* ordinal clip identifier */
                                                                                                                                                                                                                                                                                                                                                            ULONG cu_UnitNum; /* unit number for this unit */
/* the remaining unit data is private to the device */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               primary clip unit */
                                                                                                                                                                                                                                                                                                                                                  /* list of units */
                                                                                                                                                                                                                                                               (CPD_NONSTD+0)
(CPD_NONSTD+1)
(CPD_NONSTD+2)
                                                                                                                 clipboard device command definitions
                                                             Commodore-Amiga, Inc.
devices/clipboard.h Page
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              *
                                                                                                                                                                                                                                                                                                                                                                                                                          Message to Message;
                              DEVICES_CLIPBOARD_H
                                                                                                                                                                                                                                                                                                                                         struct ClipboardUnitPartial {
                                                                                                                                                                                                                                                                                   CBD_CURRENTARITEID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      struct SatisfyMsg {
   struct Message sm_Msg;
   UMORD sm_Unit;
                                                                                                                                                                                                                                                                           CED_CURRENTREADID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
                                                                                                                                                                                                                                                                                                          CHERR OBSOLETEID
                                                                                                                                                                                                                                                                                                                                                   struct Node cu_Node;
                                                                                                                                                         EXEC NODES H
                                                                                                                                                                                         EXEC LISTS H
                                                                                                                                                                                                                       EXEC PORTS H
                                                                                                                                                                     "exec/nodes.h"
                                                                                                                                                                                                                                  "exec/ports.h"
                                                                                                                                                                                                    "exec/lists.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sm_ClipID;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               #define PRIMARY_CLIP
                                                                                                                                                                                                                                                                                                                                                                                                                struct IOClipReq {
                                                                                                                                                                                                                                                                 CBD POST
                                                                                                                                                                                                                                                                                                                                                                                                                                                struct
UMORD
UBYTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ULONG
ULONG
STRPTR
ULONG
LONG
                                                                                                                                                                                                                                                                                                                                                                                                                            struct
                                                                                                                                                                                                                                                                                                                                                                                                                                       struct
8 16:36 1985
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BYTE
                                                                                                                                                                     #include
                                                                                                                                                                                                     #Include
                                                                                                                                                                                                                                   Include
                                                                                                                                                                                                                                                                                                          #define
                                                                                                                                                                                                                                                                  #define
                                                                                                                                                                                                                                                                            define
                                                                                                                                                                                                                                                                                     #define
                               #1fndef
                                                                                                                                                           #1 fndef
                                                                                                                                                                                          #1fndef
                                                                                                                                                                                                                         #1 fndef
                                                                                                                                                                                                                                             #end1f
                                                                                                                                                                                Hend1f
                                                                                                                                                                                                               tend1f
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ä
                                                                                                                                                                                                                                                                                                                                                                                   ä
                                                                                                                           459786
 9
```

```
boot block checksum (balance) */
                                                                                                                                                                                               /* 4 character identifier */
/* boot block checksum (balar
/* reserved for DOS patch */
                                                                                                                                                                                                                                                                                       (('D'<<24) | ('O'<<16) | ('S'<<8) )
('K'<<24) | ('I'<<16) | ('C'<<8) | ('K'))
                                                                                                                @Header: bootblock.h,v 27.2 85/07/10 01:55:47 neil Exp
                                                                                                                                                                                                                                           /* 1K bootstrap */
                                                                                                                                                                                                                                                             #define BBID_DOS { 'D', '0', 'S', '\0' } #define BBID_XICK { 'K', 'I', 'C', 'K' }
devices/bootblock.h Page 1
                                    Commodore-Amiga, Inc
                                                                                                                                                                      /****** BootBlock definition: */
                                              bootblock.h
                                                                                                                                                                                                                                              ~
                                                                                                                                                                                                                                              BOOTSECTS
                                                                                                                                                                                                                     bb_dosblock;
                                                                                                                                                                                                                                                                                         #define BBNAME_DOS
#define BBNAME_XICK
                                                                                                                                                                                                   UBYTE bb_1d[4];
LONG bb_chlosum;
                                                                                                                                                                                          struct BootBlock
                                                                                          Source Control
                                                                                                                                       $Locker:
  8 16:36 1985
                                                                                                                                                                                                            LONG
                                                                                                                                                                                                                                                #define
                                                        Dec
```

| | ~ · · · · · · · · · · · · · · · · · · · | ~ · · · · · · · · · · · · · · · · · · · | 17 | #ifndef #define | DEVICES_CONSOLE_H DEVICES_CONSOLE_H | H 27) |
|--|--|--|------------|--------------------|--|---|
| | | | w 4 | | | 在建筑的建筑的建筑的建筑的建筑的建筑的建筑的建筑的建筑的建筑的建筑的建筑的建筑的建 |
| ^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | ^^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | ^^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | S | • | conso | le.h |
| /* * * * * * * * * * * * * * * * * * * | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | \" * * * * * * * * * * * * * * * * * * * | 0 t | | | 化催化剂 医红细胞 经存货 医乳球 医乳球 医乳球球球 医乳球球球 医乳球球球球球球球球球球球球球球球球 |
| | | | ~ @ | ******* | | 计转换 医乳球球球球球 医细胞性细胞性细胞性细胞细胞细胞细胞细胞细胞细胞性细胞性细胞性细胞性细胞性细胞性细 |
| | | | 6 | * Conso | le device comma | and definitions |
| | | | 10 | • | | |
| | | | 11 | * Source | ce Control | |
| | | | 17 | * | | |
| | | | E : | * \$Hea(| | |
| | | | * = | * • | | |
| | | | 19 | * | · . | |
| #ifndef EXEC_IO.H" #include "exec/10.h" #endif #include "exec/10.h" #endif #endif /*********************************** | #ifndef EXEC_1O_H #include "exec/lo.h" #endif #endif #console commands ****** /************* /*********** /****** | #ifndef EXEC_IO_H #include "exec/lo.h" #endif #include "exec/lo.h" #endif #endif /************************************ | 11 | ******* | ***** | |
| #include "exec_lo.H" #include "exec_lo.h" #endif #endif #endif #console commands *******/ #define CD_SETKETMAP (CPD_NONSTD+0) #define CD_SETKETMAP (CPD_NONSTD+1) #define SCR_PENDE #define SCR_PENDE #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 33 #define SCR_RED 33 #define SCR_RED 33 #define SCR_RED 33 #define SCR_RED 34 #define SCR_NETELOW 35 #define SCR_NETELOW 36 #define SCR_NETEROR 41 #define SCR_NETEROR 42 #define SCR_NETEROR 43 #define SCR_NETEROR 44 #define SCR_NETEROR 45 #define SCR_N | #include "exec/io.h" #include "exec/io.h" #endif #include "exec/io.h" #endif #console commands ****** #define CD_ASKICEYMAP (CMD_NONSID+1) #define CD_ASKICEYMAP (CMD_NONSID+1) #define SCR_PRIMARY 0 | #include "exec_lo.H" #include "exec_lo.h" #endif #endif #endif #endif #endif #endif #endif #define CD_SETKETMAP (CPD_NONSTD+1) #define SCR_PETMARY (CPD_NONSTD+1) #define SCR_PETMARY 0 #define SCR_PETMARY 0 #define SCR_PETMARY 7 #define SCR_REACK 30 #define SCR_REACK 30 #define SCR_REDE 31 #define SCR_REDE 33 #define SCR_REDE 33 #define SCR_REDE 33 #define SCR_REDE 33 #define SCR_REDE 34 #define SCR_REDE 41 #define SCR_REUER 43 #define SCR_REUER 43 #define SCR_REUER 44 #define SCR_REUER 43 #define SCR_REUER 43 #define SCR_REUER 44 #define SCR_REUER 45 #define SCR_REUER 64 #def | 18 | | | |
| #INCLIUMO "exec/lo.h" ##INCLIUMO "exec/lo.h" ##INCLIUMO "exec/lo.h" ##INCLIUMO "EXEKETMAP (CMD_NONSTD+0) ##define CD_SETKETMAP (CMD_NONSTD+1) ##define SCR_FRIMARY 0 ##define SCR_FRIMARY 0 ##define SCR_FRIMARY 0 ##define SCR_FRIMARY 0 ##define SCR_FRIMARY 30 ##define SCR_FRIMARY 31 ##define SCR_FRIMARY 33 ##define SCR_FRIMARY 33 ##define SCR_FRIMARY 35 ##define SCR_FRIMARY 36 ##define SCR_FRIMARY 41 ##define SCR_FRIMARY 42 ##define SCR_FRIMARY 44 ##define SCR | #INCLUDE "EXEC/IO.h" #endif #endif /*********************************** | #INCLINGA "exec/lo.h" #endif #endif #endif #endif #console commands ******* #define CD_ASKCETMAP (CMD_NONSTD+1) #define CD_ASKCETMAP (CMD_NONSTD+1) #define SCR_PRIMARY 0 #define SCR_PRIMARY 0 #define SCR_ITALIC 3 #define SCR_ITALIC 3 #define SCR_RED 31 #define SCR_RED 31 #define SCR_RED 32 #define SCR_RED 33 #define SCR_RED 34 #define SCR_CREN 35 #define SCR_CREN 36 #define SCR_CRENC 40 #define SCR_CRENC 41 #define SCR_CRENC 42 #define SCR_REDBC 41 #define SCR_CRENC 43 #define SCR_CRENC 43 #define SCR_CRENC 44 #define SCR_CRENC 44 #define SCR_CRANG 45 #define SCR_CRANG 46 #define SCR_CRANG 45 #def | 61 2 | #1fndef | | |
| #define CD_ASKCETMAP (CMC_NONSTD+0) #define CD_ASKCETMAP (CMC_NONSTD+1) #define CD_ASKCETMAP (CMC_NONSTD+1) #define SCR_PRIMARY 0 | ###################################### | #define CD_ASKCETMAP (CMD_NONSTD+0) #define CD_ASKCETMAP (CMD_NONSTD+1) #define SCR_PRIMARY (CMD_NONSTD+1) #define SCR_PRIMARY 0 #define SCR_PRIMARY 0 #define SCR_PRIMARY 0 #define SCR_NEGATIVE 7 /* these names refer to the ANSI standard, not the implementation #define SCR_NEGATIVE 3 #define SCR_NEGATIVE 3 #define SCR_NELLOW 33 #define SCR_NELLOW 34 #define SCR_NELLOW 35 #define SCR_NELLOW 35 #define SCR_NELLOW 36 #define SCR_NELLOW 37 #define SCR_NELLOW 36 #define SCR_NELLOW 36 #define SCR_NELLOW 36 #define SCR_NELLOW 41 #define SCR_NELLOW 43 #define SCR_NELLOW 44 #define SCR_NELLOW 45 #define SCR_NELLOW 45 #define SCR_NELLOW 45 #define SCR_NELLOW 45 #define SCR_NELLOW 46 #define SCR_NELLOW 47 | 3 5 | #Include | | |
| #define CD_ASKCETWAP (CPD_NONSTD+1) #define CD_ASKCETWAP (CPD_NONSTD+1) #define CD_SETKETWAP (CPD_NONSTD+1) #define SCR_PRIMARY 0 #define SCR_PRED 3 #define SCR_PRED 31 #define SCR_PRED 32 #define SCR_PRED 33 #define SCR_PRED 34 #define SCR_PRED 35 #define SCR_PRED 35 #define SCR_PRED 41 #define SCR_PRED 42 #define SCR_PRED 43 #define SCR_PRED 44 #define SCR_PRED 44 #define SCR_PRED 44 #define SCR_PRED 45 | #define CD_ASKGEYMAP (CMD_NONSTD+0) #define CD_ASKGEYMAP (CMD_NONSTD+1) #define CD_SETKEYMAP (CMD_NONSTD+1) #define SCR_PRIMARY 0 #define SCR_PRIMARY 0 #define SCR_RIPALIC 3 #define SCR_RED 1 #define SCR_RED 31 #define SCR_RED 31 #define SCR_RED 31 #define SCR_RED 32 #define SCR_RED 33 #define SCR_CMAN 33 #define SCR_CMAN 35 #define SCR_CMAN 36 #define SCR_CMAN 37 #define SCR_CMAN 36 #define SCR_CMAN 36 #define SCR_CMAN 37 #define SCR_CMAN 36 #define SCR_CMAN 37 #define SCR_MAN | #define CD_ASKCETMAP (CMD_NONSTD+1) #define CD_ASKCETMAP (CMD_NONSTD+1) #define CD_SETKETMAP (CMD_NONSTD+1) #define SCR_PRIMARY 0 | 22 | 11000 | | |
| #define CD_ASKCETMAP (CMD_NONSTD+1) #define CD_SETKETMAP (CMD_NONSTD+1) #define SCR_PRIMARY 0 | #define CD_SETKETMAP (CMD_NONSTD+1) #define CD_SETKETMAP (CMD_NONSTD+1) #define SCR_PRIMARY 0 #define SCR_PRIMARY 0 #define SCR_ITALIC 3 #define SCR_ITALIC 3 #define SCR_ITALIC 3 #define SCR_REACK 3 #define SCR_REACK 3 #define SCR_REACK 3 #define SCR_RELOM 3 #define SCR_RELOM 3 #define SCR_NELICM 4 #define SCR_NELICMSC 4 # | #define CD_ASKKEYMAP (CMD_NONSTD+1) #define CD_ASKKEYMAP (CMD_NONSTD+1) #define SCR_REIMARY 0 #define SCR_REIMARY 33 #define SCR_REIMARY 33 #define SCR_REIMARY 34 #define SCR_REIMARY 35 #define SCR_REIMARY 35 #define SCR_REIMARY 36 #define SCR_REIMARY 37 #define SCR_REIMARY 36 #define SCR_REIMARY 36 #define SCR_REIMARY 37 #define SCR_REIMARY 36 #define SCR_REIMARY 36 #define SCR_REIMARY 37 #define SCR_REIMARY 37 #define SCR_REIMARY 36 #define SCR_REIMARY 36 #define SCR_REIMARY 36 #define SCR_MACHINE 37 #define SCR_MACHINE 36 #def | 23 | | Console command | |
| #define CD_SETKETMAP (CMD_NONSTD+1) #define SCR_PRIMARY 0 | #define CD_SETKEYMAP (CMD_NONSTD+1) #define SCR_PRIMARY | #define CD_SETKETMAP (CMD_NONSTD+1) #define SCR_PENMARY 0 | 24 | | CD ASKIKEYMAP | |
| #define SCR_PRIMARY 0 #define SCR_PRIMARY 0 #define SCR_DELD 1 #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 7 #define SCR_RECATIVE 7 #define SCR_RECATIVE 33 #define SCR_RELOM 33 #define SCR_RELOM 33 #define SCR_RELOM 34 #define SCR_RELOM 35 #define SCR_RELOM 36 #define SCR_RELOM 41 #define SCR_RELOM 42 #define SCR_RELOM 44 #define SCR_RELOM 45 #define SCR_RELOM 46 #define SCR_RELOM 47 | #define SCR_PRIMARY #define SCR_PRIMARY #define SCR_ITALIC #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 4 #define SCR_NEGATIVE 7 #define SCR_RELOR 30 #define SCR_RELOR 31 #define SCR_RELOR 33 #define SCR_NEGATIVE 34 #define SCR_NEGATIVE 35 #define SCR_NEGATIVE 36 #define SCR_NEGATIVE 45 #de | #define SCR_PRIMARY 0 #define SCR_PRIMARY 0 #define SCR_PRIMARY 0 #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 33 #define SCR_RELOR 33 #define SCR_RELOR 33 #define SCR_PRILOR 33 #define SCR_PRILOR 34 #define SCR_PRILOR 35 #define SCR_PRILOR 35 #define SCR_PRILOR 36 #define SCR_PRILOR 41 #define SCR_PRILOR 42 #define SCR_PRILOR 43 #define SCR_PRILOR 44 #define SCR_PRILOR 44 #define SCR_PRILOR 45 #define SCR | 22 | #define | CD SETKEYMAP | (OD NONSTD+1) |
| #define SCR_PRIMARY 0 #define SCR_PRIMARY 0 #define SCR_LTALIC 3 #define SCR_LUDERSCORE 4 #define SCR_LUDERSCORE 4 #define SCR_LUDERSCORE 3 #define SCR_RELACK 30 #define SCR_RELOM 31 #define SCR_PRILOM 33 #define SCR_PRILOM 33 #define SCR_PRILOM 34 #define SCR_PRILOM 35 #define SCR_PRILOM 36 #define SCR_PRILOM 36 #define SCR_RELOME 37 #define SCR_RELOME 34 #define SCR_RELOME 40 #define SCR_RELOME 41 #define SCR_RELOME 42 #define SCR_RELOME 43 #define SCR_RELOME 44 #define SCR_RELUERC 44 #define SCR_RELOME 44 | #define SCR_PRIMARY #define SCR_PRIMARY #define SCR_PRIMARY #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 7 #define SCR_RELOK 30 #define SCR_RELOK 31 #define SCR_RELOK 33 #define SCR_RELOK 33 #define SCR_MACENTA 35 #define SCR_MACENTA 35 #define SCR_MACENTA 35 #define SCR_MACENTA 36 #define SCR_MACENTA 40 #define SCR_MACENTA 41 #define SCR_MACENTA 42 #define SCR_MACENTA 43 #define SCR_MACENTA 44 #define SC | #define SCR_PRIMARY 0 #define SCR_DENINGRAM #define SCR_DENINGRSCORE 4 #define SCR_UNDCATIVE 7 #define SCR_UNDCATIVE 7 #define SCR_UNDCATIVE 7 #define SCR_RELOK 33 #define SCR_RELOK 33 #define SCR_RELOK 33 #define SCR_METE 34 #define SCR_METE 37 #define SCR_METE 44 #define SCR_METER 45 #define S | 9 | ı | | |
| #define SCR_PRIMARY 0 #define SCR_DELD 1 #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 4 #define SCR_RECATIVE 7 #define SCR_RELOW 30 #define SCR_RELOW 33 #define SCR_RELOW 33 #define SCR_RELOW 34 #define SCR_RELOW 35 #define SCR_RELOW 36 #define SCR_RELOW 41 #define SCR_RELOW 44 #define SCR_RELOW 45 #define SCR_RELOW 45 #define SCR_RELOW 46 #define SCR_RELOW 47 #define SCR_RELOW 47 #define SCR_RELOW 46 #define SCR_RELOW 47 | #define SCR_PRIVARY 0 #define SCR_PRIVARY 0 #define SCR_PRIVARY 0 #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 3 #define SCR_RELOR 30 #define SCR_RELOR 33 #define SCR_RELOR 33 #define SCR_NACENTA 35 #define SCR_NACENTA 35 #define SCR_NACENTA 35 #define SCR_NACENTA 35 #define SCR_NACENTA 36 #define SCR_NELUE 40 #define SCR_NELUE 41 #define SCR_NELUE 42 #define SCR_NELUE 44 #define SCR_NELUE 44 #define SCR_NELUEDC 45 #define SCR_NELUEDC 45 #define SCR_NACENTA 47 #define SCR_NACENTA 47 #define SCR_NACENTA 47 | #define SCR_PRIMARY 0 #define SCR_PRIMARY 0 #define SCR_DELD 1 #define SCR_DELD 1 #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 4 #define SCR_NECATIVE 7 #define SCR_REEN 31 #define SCR_RELUM 33 #define SCR_PRIMARY 33 #define SCR_PRIMARY 35 #define SCR_PRIMARY 35 #define SCR_PRIMARY 36 #define SCR_PRIMARY 41 #define SCR_PRIMARY 42 #define SCR_PRIMARY 43 #define SCR_PRIMARY 43 #define SCR_PRIMARY 45 #define SC | 7.7 | | | |
| #define SCR_PRIMARY 0 | #define SCR_PRIMARY #define SCR_DLD #define SCR_ITALIC #define SCR_UNDERSCORE 4 #define SCR_NEGATIVE 7 #define SCR_RED 31 #define SCR_RED 31 #define SCR_RED 31 #define SCR_RED 33 #define SCR_RED 33 #define SCR_NACENTA 35 #define SCR_NACENTA 35 #define SCR_NHITE 37 #define SCR_NHITE 37 #define SCR_NELUE 41 #define SCR_NELUE 42 #define SCR_NELUE 44 #define SCR_NELUE 44 #define SCR_NELUE 44 #define SCR_NELUED 41 #define SCR_NELUED 41 #define SCR_NELUED 41 #define SCR_NELUED 44 #define SCR_NELUED 44 #define SCR_NACENTABC 45 | #define SCR_PRIMARY 0 #define SCR_DLD 1 #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 4 #define SCR_NECATIVE 7 #define SCR_RELACK 30 #define SCR_RELOM 31 #define SCR_RELOM 33 #define SCR_PRILOM 33 #define SCR_PRILOM 35 #define SCR_PRILOM 36 #define SCR_PRILOM 37 | 9 0 | | XX parameters | |
| #define SCR_UNDERSCORE #define SCR_UNDERSCORE #define SCR_UNDERSCORE #define SCR_UNDERSCORE #define SCR_RELOR #define SC | #define SCR_DELLED #define SCR_ITALIC #define SCR_UNDERSCORE #define SCR_NEGATIVE 7 /* these names refer to the ANSI standard, #define SCR_RED 31 #define SCR_RED 32 #define SCR_RED 33 #define SCR_VELICON 33 #define SCR_CYAN 35 #define SCR_CYAN 36 #define SCR_CYAN 36 #define SCR_CYAN 36 #define SCR_CYAN 36 #define SCR_CYELONG 40 #define SCR_REDEC 41 #define SCR_REDEC 42 #define SCR_RELUEDC 44 #define SCR_CYANBC 45 #define SCR_CYANBC 45 #define SCR_CYANBC 47 #define SCR_CYANBC 47 | #define SCR_UNDERSCORE #define SCR_UNDERSCORE #define SCR_UNDERSCORE #define SCR_UNDERSCORE #define SCR_URLOR #define SC | 0 | | CO DETMADY | |
| #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 4 #define SCR_RELACK 30 #define SCR_RELOW 31 #define SCR_NELOW 33 #define SCR_NELOW 34 #define SCR_NELOW 35 #define SCR_NELOW 35 #define SCR_NELOW 36 #define SCR_NELOW 36 #define SCR_NELOW 37 #define SCR_NELOW 37 #define SCR_NELOW 37 #define SCR_NELOW 37 #define SCR_NELOW 41 #define SCR_NELOW 42 #define SCR_NELOW 43 #define SCR_NELOW 44 #define SCR_NELOW 44 #define SCR_NELOW 45 #define SCR_NELOW 45 #define SCR_NELOW 45 #define SCR_NELOW 46 #define SCR_NELOW 46 #define SCR_NELOW 47 #define SCR_NELOW 46 #define SCR_NELOW 46 #define SCR_NELOW 47 #define SCR_NELOW 46 #define SCR_NELOW 47 | #define SCR_ITALIC 3 #define SCR_UNDERSCORE 4 #define SCR_NEGATIVE 7 #define SCR_RED 31 #define SCR_RED 31 #define SCR_RED 32 #define SCR_NELON 33 #define SCR_NACENTA 35 #define SCR_NACENTA 35 #define SCR_NACENTA 36 #define SCR_NACENTA 36 #define SCR_NELON 36 #define SCR_NELON 36 #define SCR_NELON 36 #define SCR_NELON 36 #define SCR_NELONG 41 #define SCR_NELONG 42 #define SCR_NELUNBC 43 #define SCR_NELUNBC 44 #define SCR_NELUNBC 44 #define SCR_NELUNBC 44 #define SCR_NELUNBC 44 #define SCR_NELUNBC 45 | #define SCR_ITALIC 3 #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 7 #define SCR_CREEN 30 #define SCR_CREEN 31 #define SCR_CREEN 33 #define SCR_VELICON 33 #define SCR_VELICON 34 #define SCR_VELICON 35 #define SCR_VELICON 35 #define SCR_VELICON 36 #define SCR_VELICON 41 #define SCR_VELICON 42 #define SCR_VELICON 44 #define SCR_VELICON 44 #define SCR_VELICON 45 | 31 | | SCR BOLD | • |
| #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 7 #define SCR_UREATIVE 30 #define SCR_CREEN 31 #define SCR_CREEN 33 #define SCR_CREEN 34 #define SCR_VELLOM 34 #define SCR_VELLOM 35 #define SCR_VELLOM 35 #define SCR_VELLOM 35 #define SCR_VELLOM 36 #define SCR_VELLOMEC 40 #define SCR_REENEC 41 #define SCR_URENEC 42 #define SCR_URENEC 43 #define SCR_URENEC 44 #define SCR_URENEC 44 #define SCR_URENEC 45 | #define SCR_UNDERSCORE 4 #define SCR_NEGATIVE 7 #define SCR_NEGATIVE 30 #define SCR_RED 31 #define SCR_NELOM 33 #define SCR_YELLOM 34 #define SCR_YELLOM 34 #define SCR_VELLOM 34 #define SCR_NELUE 34 #define SCR_NELUE 35 #define SCR_NELUE 37 #define SCR_NELUE 37 #define SCR_NELUE 40 #define SCR_NELUE 41 #define SCR_NELUEC 41 #define SCR_NELUEC 42 #define SCR_NELUEC 44 #define SCR_NELUEC 45 | #define SCR_UNDERSCORE 4 #define SCR_UNDERSCORE 7 #define SCR_NECATIVE 7 #define SCR_NECATIVE 31 #define SCR_NELLOM 32 #define SCR_NELLOM 33 #define SCR_NELLOM 34 #define SCR_NELLOM 35 #define SCR_NELLOM 36 #define SCR_NELLOM 41 #define SCR_NELLOM 43 #define SCR_NELLOM 44 #define SCR_N | 32 | | SCR ITALIC | 167 |
| #define SCR_NECATIVE 7 /* these names refer to the ANSI standard, not the implementation #define SCR_RELOK 30 #define SCR_RELOK 33 #define SCR_NELOK 33 #define SCR_NELOK 35 #define SCR_NELOK 36 #define SCR_NELOK 36 #define SCR_NELOK 36 #define SCR_NELOK 36 #define SCR_NELOKBC 40 #define SCR_RELOKBC 41 #define SCR_RELOKBC 42 #define SCR_NELOKBC 43 #define SCR_NELOKBC 44 #define SCR_NELOKBC 44 #define SCR_NELOKBC 44 #define SCR_NELOKBC 45 #define SCR_NELOKBC 45 #define SCR_NELOKBC 45 #define SCR_NELOKBC 46 #define SCR_NELOKBC 47 | #define SCR_NEGATIVE 7 * these names refer to the ANSI standard, #define SCR_RED # define SCR_RED # define SCR_RED # define SCR_NELON 33 # define SCR_NELON 34 # define SCR_NELON 34 # define SCR_NELON 35 # define SCR_NELON 36 # define SCR_NELON 36 # define SCR_NELON 36 # define SCR_NELON 40 # define SCR_NELON 41 # define SCR_NELON 42 # define SCR_NELON 43 # define SCR_NELON 44 # define SCR_NACENTARC 45 | #define SCR_NECATIVE 7 /* these names refer to the ANSI standard, not the implementation #define SCR_RELOK 30 #define SCR_RELOK 31 #define SCR_NELOK 33 #define SCR_NELOK 34 #define SCR_NELOK 35 #define SCR_NELOK 35 #define SCR_NELOK 36 #define SCR_NELOK 36 #define SCR_NELOK 40 #define SCR_NELOK 41 #define SCR_NELOK 42 #define SCR_NELOK 43 #define SCR_NELOK 44 #define SCR_NELOK 44 #define SCR_NELOK 45 | 33 | | SOR UNDERSCORE | |
| /* these names refer to the ANSI standard, not the implementation #define SCR_RELACK 30 #define SCR_RELACK 31 #define SCR_RELOM 32 #define SCR_VELIOW 33 #define SCR_VELIOM 35 #define SCR_VELIOM 36 #define SCR_VELIOM 36 #define SCR_RELOG 40 #define SCR_RELOG 41 #define SCR_RELOG 42 #define SCR_RELOG 43 #define SCR_RELOG 44 #define SCR_RELOG 45 #define SCR_RELOG 46 #define SCR_RELOG 45 | /* these names refer to the ANSI standard, #define SCR_RELACK 30 | /* these names refer to the ANSI standard, not the implementation #define SCR_RED 31 #define SCR_RED 32 #define SCR_RELOW 33 #define SCR_RELOW 33 #define SCR_RELOW 35 #define SCR_MACKING 36 #define SCR_MACKING 36 #define SCR_MACKING 41 #define SCR_MEINER 42 #define SCR_MEINER 42 #define SCR_MEINER 43 #define SCR_MEINER 44 #define SCR_MEINER 45 #defin | 8 | | SCR NECATIVE | |
| #define SCR_BEACK 30 # these names refer to the ANSI standard, not the implementation # define SCR_BEACK 31 # define SCR_RELOW 32 # define SCR_RELOW 33 # define SCR_RELOW 34 # define SCR_RELOW 35 # define SCR_RELOW 35 # define SCR_RELOW 36 # define SCR_RELOW 37 # define SCR_RELOW 37 # define SCR_RELOW 41 # define SCR_RELOW 42 # define SCR_RELOW 43 # define SCR_RELOW 44 # define SCR_RELOW 45 # define SCR_RELOW 45 # define SCR_RELOW 45 # define SCR_RELOW 45 # define SCR_RELOW 47 # | /* these names refer to the ANSI standard, #define SCR_BEACK 30 #define SCR_CREEN 32 #define SCR_CREEN 33 #define SCR_CREEN 33 #define SCR_CRANN 34 #define SCR_CRANN 34 #define SCR_CRANN 34 #define SCR_CRANN 34 #define SCR_CREENEC 40 #define SCR_CREENEC 41 #define SCR_CREENEC 42 #define SCR_CREENEC 42 #define SCR_CREENEC 42 #define SCR_CREENEC 44 #define SCR_CREENEC 44 #define SCR_CREENEC 45 #define SCR_CREENEC 45 #define SCR_CRANNCE 47 | # these names refer to the ANSI standard, not the implementation # define SCR_RELOK # define SCR_RELOM # define SCR_MACENTA | 35 | | | |
| #define SCR_RELOK #define SCR_RELOW #define SCR_CREEN #define SCR_VELOW #define SCR_VELOR #define SCR_VACENTA #define SCR_WHITE #define SCR_WHITE #define SCR_WELOK #define SCR_RELOW #define SCR_RELOW #define SCR_RELOW #define SCR_RELOW #define SCR_RELOW #define SCR_RELOW #define SCR_WELOW #define SCR_WELOW #define SCR_WACENTABC #define SCR_WACENTABC #define SCR_WACENTABC #define SCR_WACENTABC #define SCR_WAITEBC | #define SCR_RED #define SCR_RED 31 #define SCR_CREEN 33 #define SCR_VELICON 34 #define SCR_VELICON 35 #define SCR_WACENTA 36 #define SCR_WHITE #define SCR_WHITE #define SCR_REDBC #define SCR_VELICONBC #define SCR_VELICONBC #define SCR_WACENTABC #define SCR_WACENTABC #define SCR_WACENTABC #define SCR_WACENTABC #define SCR_WALTEBC | #define SCR_RELACK 30 #define SCR_CREEN 31 #define SCR_CREEN 33 #define SCR_VELION 34 #define SCR_VELUE 34 #define SCR_VELUE 35 #define SCR_VELUE 35 #define SCR_VELUE 37 #define SCR_REDBC 40 #define SCR_REDBC 41 #define SCR_RELUEBC 42 #define SCR_RELUEBC 43 #define SCR_RELUEBC 44 #define SCR_RELUEBC 45 #define SCR_VECANBC 45 #define SCR_VELUEBC 45 | မ္တ | these | names refer | the ANSI standard, not the implementation |
| #define SCR_RED #define SCR_XELOW #define SCR_NELLOW #define SCR_NACENTA #define SCR_NACENTA #define SCR_CYAN #define SCR_CYAN #define SCR_REFAULT #define SCR_REENEC #define SCR_REENEC #define SCR_REENEC #define SCR_REENEC #define SCR_REENEC #define SCR_NACENTABC | #define SCR_RED #define SCR_REEN #define SCR_RIUE #define SCR_RUE #define SCR_PANITA #define SCR_PANITE #define SCR_REENE #define SCR_REENE #define SCR_REENE #define SCR_REENE #define SCR_REICOMBC #define SCR_REICOMBC #define SCR_REUBE #define SCR_RUEBC #define SCR_WHITEBC #define SCR_WHITEBC | #define SCR_RED #define SCR_REEN #define SCR_NEUE #define SCR_NEUE #define SCR_PACENTA #define SCR_PACENTA #define SCR_PACENTA #define SCR_REAUE #define SCR_REAUE #define SCR_REDBC #define SCR_REDBC #define SCR_REDBC #define SCR_REUEBC #define SCR_REUEBC #define SCR_REUEBC #define SCR_REUEBC #define SCR_RUEBC | 37 | •• | SCR. BLACK | 30 |
| #define SCR_CREEN #define SCR_MUE #define SCR_MUE #define SCR_MACENTA #define SCR_MHITE #define SCR_REILON #define SCR_MACENTABC | #define SCR_CREEN #define SCR_VELLOW #define SCR_MACENTA #define SCR_MACENTA #define SCR_MHITE #define SCR_MHITE #define SCR_REDBC #define SCR_REDBC #define SCR_REDBC #define SCR_RELEBC #define SCR_RELEBC #define SCR_RELEBC #define SCR_RELEBC #define SCR_RENBC #define SCR_MACENTABC #define SCR_MHITEBC #define SCR_MHITEBC #define SCR_WHITEBC | #define SCR_CREEN #define SCR_VELLOW #define SCR_MACENTA #define SCR_MACENTA #define SCR_METE #define SCR_LEAULT #define SCR_REDEC #define SCR_REDEC #define SCR_RELOWEC #define SCR_RELOWEC #define SCR_RELOWEC #define SCR_RELOWEC #define SCR_RUEBC | ස | | SCR. RED | 31 |
| #define SCR_YELLOW #define SCR_BAUE #define SCR_CYAN #define SCR_CYAN #define SCR_DEFAULT #define SCR_BETOE #define SCR_BETOE #define SCR_REENEC #define SCR_REENEC #define SCR_REENEC #define SCR_REENEC #define SCR_REENEC #define SCR_REVEREC #define SCR_REVEREC #define SCR_MACENTABC | #define SCR_VELLOW #define SCR_MACENTA #define SCR_MACENTA #define SCR_WHITE #define SCR_WHITE #define SCR_REDEC #define SCR_REDEC #define SCR_REDEC #define SCR_REDEC #define SCR_RELOWEC #define SCR_RELEEC #define SCR_WITEEC #define SCR_WHITEEC #define SCR_WHITEEC #define SCR_WHITEEC | #define SCR_VELLOW #define SCR_MACENTA #define SCR_MACENTA #define SCR_MHITE #define SCR_MHITE #define SCR_REBBG #define SCR_CYANBG | 33 | | SCR CREEN | 32 |
| #define SCR_BLUE #define SCR_MACENTA #define SCR_MHITE #define SCR_MHITE #define SCR_MEDGC #define SCR_REDGC #define SCR_RELOMBC #define SCR_RENTEBC #define SCR_CYANBC #define SCR_CYANBC #define SCR_CYANBC #define SCR_MHITEBC #define SCR_MHITEBC | #define SCR_NACENTA #define SCR_NACENTA #define SCR_CCAN #define SCR_DEFAULT #define SCR_DEFAULT #define SCR_REDBG #define SCR_REDBG #define SCR_YELLOMBG #define SCR_YELLOMBG #define SCR_NACENTABG #define SCR_NACENTABG #define SCR_WACENTABG #define SCR_WACENTABG #define SCR_WACENTABG #define SCR_WACENTABG #define SCR_WACENTABG #define SCR_WACENTABG #define SCR_WATITEBG | #define SCR_BLUE #define SCR_MACENTA #define SCR_CCAN #define SCR_MHITE #define SCR_BLACKBC #define SCR_REDBC #define SCR_REDBC #define SCR_RELOBC #define SCR_MACENTABC | 40 | | SCR YELLOW | 33 |
| #define SCR_NACENTA #define SCR_CCAN #define SCR_CCAN #define SCR_DEFAULT #define SCR_REENEC #define SCR_REENEC #define SCR_REIGOR #define SCR_REIGOREC #define SCR_REIGOREC #define SCR_NAGENEC #define SCR_NAGENEC #define SCR_NAGENTABC #define SCR_CCANBC #define SCR_CCANBC #define SCR_CCANBC #define SCR_DEFAULTBC | #define SCR_WACENTA #define SCR_CYAN #define SCR_WHITE #define SCR_DEFAULT #define SCR_REACKBC #define SCR_RELORG #define SCR_RELORG #define SCR_RELORG #define SCR_YELLOWBC #define SCR_RELORG #define SCR_WACENTABC #define SCR_WACENTABC #define SCR_WHITEBC #define SCR_WHITEBC | #define SCR_WACENTA #define SCR_CYAN #define SCR_WHITE #define SCR_DEFAULT #define SCR_REDBG #define SCR_REDBG #define SCR_YELLOWBG #define SCR_YELLOWBG #define SCR_YELLOWBG #define SCR_WACENTABG #define SCR_WAGENTABG | 41 | | SCR BLUE | 7.5 |
| #define SCR_CYAN #define SCR_MHITE #define SCR_DEFAULT #define SCR_REDBG #define SCR_REDBG #define SCR_REDBG #define SCR_MACKED #define SCR_MACKED #define SCR_MACKINEG #define SCR_MACKINEG #define SCR_MACKINEG #define SCR_MHITEBG #define SCR_MHITEBG #define SCR_MHITEBG | #define SCR_CYAN #define SCR_MHITE #define SCR_DEFAULT #define SCR_RELACKBC #define SCR_RELDBC #define SCR_RELLOMBC #define SCR_RELLOMBC #define SCR_RELLOMBC #define SCR_WACENTABC #define SCR_WHITEBC #define SCR_WHITEBC | #define SCR_CYAN #define SCR_MHITE #define SCR_DEFAULT #define SCR_RELACKBC #define SCR_RELDBC #define SCR_RELDBC #define SCR_RELLOWBC #define SCR_RELLOWBC #define SCR_NACENTABC #define SCR_CYANBC #define SCR_WACENTABC #define SCR_WACENTABC #define SCR_WACENTABC #define SCR_WACENTABC #define SCR_WACENTABC #define SCR_WAGENTABC | 42 | | SCR_MACENTA | 35 |
| #define SCR_WHITE #define SCR_BLACKBG #define SCR_RELOKBG #define SCR_REENBG #define SCR_RELICONBG #define SCR_RELUEBG #define SCR_MACHEBG #define SCR_MACHEBG #define SCR_MACHEBG #define SCR_MACHEBG #define SCR_WHITEBG #define SCR_WHITEBG | #define SCR_WHITE #define SCR_DEFAULT #define SCR_REACKBC #define SCR_REDBC #define SCR_VELLOMBC #define SCR_VELLOMBC #define SCR_NELEBC #define SCR_WACENTABC #define SCR_WACENTABC #define SCR_WALITEBC #define SCR_WAITEBC | #define SCR_WHITE #define SCR_DEFAULT #define SCR_BEACKBC #define SCR_REENBC #define SCR_REENBC #define SCR_REENBC #define SCR_REENBC #define SCR_MACENTABC #define SCR_CYANBC #define SCR_WHITEBC #define SCR_WHITEBC | 43 | | SCR CYAN | * * |
| #define SCR_DEFAULT #define SCR_READEC #define SCR_REDBC #define SCR_RELLOWBC #define SCR_RELLOWBC #define SCR_RELLOWBC #define SCR_RENTABC #define SCR_CYANBC #define SCR_CYANBC #define SCR_CYANBC #define SCR_CYANBC #define SCR_DEFAULTBC | #define SCR_DEFAULT #define SCR_BLACKBC #define SCR_REDBC #define SCR_RELONBC #define SCR_MICKNBC #define SCR_MACENTABC #define SCR_MACENTABC #define SCR_WACENTABC #define SCR_WACENTABC #define SCR_WACENTABC #define SCR_WACENTABC | #define SCR_DEFAULT #define SCR_DEFAULT #define SCR_REDBG #define SCR_CREEDBG #define SCR_NELLONBG #define SCR_NACENTABG #define SCR_NACENTABG #define SCR_WACENTABG #define SCR_WACENTABG #define SCR_WAITEBG #define SCR_WHITEBG | 4 | - | SCA WHITTE | 3 |
| #define SCR_REACKBC #define SCR_REDBC #define SCR_VELLOMBC #define SCR_VELLOMBC #define SCR_MCENTABC #define SCR_MCENTABC #define SCR_MACENTABC #define SCR_WHITEBC #define SCR_WHITEBC | #define SCR_BLACKBC #define SCR_REDBG #define SCR_CREENBC #define SCR_VELLOWBC #define SCR_NEUEBC #define SCR_NACENTABC #define SCR_WACENTABC #define SCR_WATITEBC #define SCR_WHITEBC | #define SCR_BLACKBC #define SCR_REDBG #define SCR_REDBG #define SCR_NELOMBC #define SCR_RUEBG #define SCR_RACENTABG #define SCR_CYANBC #define SCR_WACENTABG #define SCR_WACENTABG #define SCR_WHITEBG | . £ | | 22 DEFAIRT |) c |
| #define SCR_REACKBC #define SCR_CREENBC #define SCR_CREENBC #define SCR_NELONBC #define SCR_NACENTABC #define SCR_NACENTABC #define SCR_CCANBC #define SCR_CCANBC | #define SCR_REACKBC #define SCR_REDBG #define SCR_RELOMBC #define SCR_RELOMBC #define SCR_BULEBG #define SCR_DACENTABC #define SCR_DACENTABC #define SCR_WHITEBG #define SCR_DEFAULTBG | #define SCR_REACKBC #define SCR_REDBG #define SCR_CAREBIBG #define SCR_VELLOWBC #define SCR_BLUEBG #define SCR_BACENTABG #define SCR_WACENTABG #define SCR_WATITEG | 3 | | | ŝ |
| #define SCR_CREENEC #define SCR_CREENEC #define SCR_ELLOWEC #define SCR_MACENTABC #define SCR_MACENTABC #define SCR_CANNEC #define SCR_CANNEC #define SCR_CREENEC | #define SCR_CREBEC #define SCR_CREBEC #define SCR_RIGEC #define SCR_MACENTABC #define SCR_MACENTABC #define SCR_MACENTABC #define SCR_MAITEBC #define SCR_MAITEBC | #define SCR_REDBG #define SCR_CREENBC #define SCR_VELLOWBC #define SCR_MACENTABC #define SCR_WHITEBC #define SCR_WHITEBC #define SCR_WHITEBC | 5 5 | | CO BIACKBC | |
| #define SCR_CREENEC #define SCR_VELLOWEC #define SCR_NELEBC #define SCR_CYANEC #define SCR_CYANEC #define SCR_WHITEBC #define SCR_DEFAULTEC | #define SCR_CREENEC #define SCR_CREENEC #define SCR_NELUEBC #define SCR_NACENTABC #define SCR_NACENTABC #define SCR_WHITEBC #define SCR_DEFAULTBC | #define SCR_CREENEC #define SCR_CREENEC #define SCR_NELLOWBC #define SCR_NACENTABC #define SCR_CYANBC #define SCR_CYANBC #define SCR_WHITEBC | ì | | | |
| #define SCR_VELLONBC #define SCR_NELLONBC #define SCR_NACENTABC #define SCR_VACENTABC #define SCR_WHITEBC #define SCR_MHITEBC | #Gefine SCR_YELLONBC #define SCR_NELLONBC #define SCR_NACENTABC #define SCR_CYANBC #define SCR_WHITEBC #define SCR_WHITEBC | #define SCR_MELGABC #define SCR_MELGABC #define SCR_MACENTABC #define SCR_MACENTABC #define SCR_MHITEBC #define SCR_MHITEBC | Q 9 | | Sec Celubra Sec Celubra | 7 : |
| #define SCR_MELDEBC #define SCR_MACENTABC #define SCR_CYANBC #define SCR_MHITEBC #define SCR_MHITEBC | #define SCR_MELEBG #define SCR_MACENTABC #define SCR_CYANBC #define SCR_CYANBC #define SCR_MHITEBG #define SCR_DEFAULTBC | #define SCR_MELDEDC #define SCR_MACENTABC #define SCR_CYANBC #define SCR_CYANBC #define SCR_WHITEBC #define SCR_DEFAULTBC | 9 6 | | Section of the sectio | 7. |
| #define SCR_MACENTED #define SCR_MACENTABC #define SCR_CYANBC #define SCR_WHITEBC #define SCR_DEFAULTBC | #define SCR_MACENTABC #define SCR_CYANBC #define SCR_CYANBC #define SCR_MHITEBC #define SCR_DEFAULTBC | #define SCR_MACENTABC #define SCR_CYANBC #define SCR_CYANBC #define SCR_MHITEBC #define SCR_DEFAULTBC | 2 : | - | Sectionary of the second section secti | |
| #define SCR_NACENTABC #define SCR_CYANBC #define SCR_MHITEBC #define SCR_DEFAULTBC | #define SCR_MACENIABC #define SCR_MHITEBC #define SCR_MHITEBC | #define SCR_MACENIABC #define SCR_CYANBC #define SCR_MHITEBC #define SCR_DEFAULTBC | , ։ | _ | XX BLUEBG | #: |
| #define SCR_CYANBC #define SCR_MHITEBC #define SCR_DEFAULTBC | #define SCR_CYANBC #define SCR_WHITEBC #define SCR_DEFAULTBC | #define SCR_CYANBG #define SCR_WHITEBG #define SCR_DEFAULTBG | 22 | | SCH CHACENTABC | 45 |
| #define SCR_MHITEBC #define SCR_DEFAULTBC | #define SCR_MHITEBG #define SCR_DEFAULTBG | #define SCR_WHITEBG #define SCR_DEFAULTBG | Ğ. | | CR_CYANBC | 46 |
| #define SCR_DEFAULTBC | #define SCR_DEFAULTBC | #define SCR_DEFAULTBG | 7 | | CR WHITEBO | 47 |
| | 95 | | 22 | | CR DEFAULTBG | 49 |
| *** | 8 | 3 | , v | | | |
| | | | | | | |

Dec 8 16:36 1985 devices/clipboard.h Page 2 57 }; 58 59 #endif **- D-3** -

```
/* intuition window bound to this unit */
                                                                                                                                                                                                                                         (M_LNM+1) /* internal storage bit for AS flag */ (PMB_ASM+1) /* internal storage bit for AW flag */ 80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        *
                                                                                                                                                                                                                                                                                                                                                                                                                /* smallest area intact from resize proces
                                                      /* 0 at start, Oxffff at end of list
                                                                                                                                                                                                                                                                                                                                                                                                                                                        /* ---- read/write variables (writes must must be protected)
/* ---- storage for AskKeyMap and SetKeyMap */
struct KeyMap cu_KeyMapStruct;
/* ---- tab stops */
                                                                                                                                                                                                                                                                                                                                            /* max character position */
                                                                                                                                                                                                                                                                                                                                                             /* character raster size */
                                                                                                                                                                                                                                                                                                                             /* character position */
                                                                                                                                                                                                                                                                                                                                                                                                                               /* cursor position */
                                                                                                                                                                                                                                                                                                                                                                              /* raster origin */
                                                                                                                                                                                                                                                                                                                                                                                              /* raster maxima */
                                  Commodore-Amiga, Inc.
                                                                            Console device unit definitions
                                                                                                                                                                                                                                                                                                           /* ---- read only variables */
devices/conunit.h Page
                                                                                                                                                                                                                DEVICES_INPUTEVENT_H "devices/imputevent.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         UNCRD cu_TabStops [MAXTABS];
                                                                                                                                                                                                                                                                                                                     Window "cu_Window;
                                                                                                                                                      "devices/console.h"
                                                                                                                                                                                       "devices/keymap.h"
                                          conunit.h
                                                                                                                                             DEVICES_CONSOLE_H
                                                                                                                                                                                                                                                                                           uct ConUnit {
struct MsgPort cu_MP;
                                                                                                                                                                              DEVICES KEYMAP H
                                                                                                                    "exec/ports.h"
                                                                                                                                                                                                                                                                                                                                                                                                                cu_YMinShrink;
                                                                                                            EXEC_PORTS_H
                                                                                                                                                                                                                                                                                                                                                                                a CROrigin;
                                                                                                                                                                                                                                                                                                                                                                                       cu_YROrigin;
                                                                                                                                                                                                                                                                                                                                                                                                 cu XRExtant;
                                                                                                                                                                                                                                                                                                                                                                                                        cu YRExtant
                                                                                                                                                                                                                                                                                                                                                               cu (RS1ze;
                                                                                                                                                                                                                                                                                                                                                                       cu YRS1ze
                                                                                                                                                                                                                                                PMB_ASM
PMB_AWM
MAXTABS
                                                                                                                                                                                                                                                                                                                                              Cu OMax;
                                                                                                                                                                                                                                                                                                                                                      cu_YMax;
                                                                                                                                                                                                                                                                                                                                                                                                                                         CULYCOP;
                                                                                                                                                                                                                                                                                                                                                                                                                                  8 16:36 1985
                                                                                                                                                                                                                                                                                                                     struct
                                                                                                                      #include
                                                                                                                                                        #Include
                                                                                                                                                                                         #include
                                                                                                                                                                                                                          #include
                                                                                                                                                                                                                                                          #define
#define
                                                                                                                                                                                                                                                                                                                             FORD
                                                                                                             #1 fndef
                                                                                                                                               #1 fndef
                                                                                                                                                                                #1fndef
                                                                                                                                                                                                                  #1 fndef
                                                                                                                                                                                                                                                                                                                                     9
                                                                                                                                                                                                                                                                                                                                                              980
                                                                                                                                                                                                                                                                                                                                                                       define
                                                                                                                                                                                                                                  #end1f
                                                                                                                                                                #endif
                                                                                                                                                                                                #end1f
                                                                                                                                                                                                                                                                                            struct
                                                                                                                               #end1f
                                                                                                     222
                                                                                                                              8
```

```
*
                   these names refer to the implementation, they are the preferred
                                                                                                                                                                                                                                              /* linefeed newline mode */
/* auto scroll mode */
/* auto wran mode */
                          for use with the Amiga console device.
                                                                                                                                                                                                                                                SM and RM parameters *****/
8 16:36 1985 devices/console.h Page 2
                                                                                                                                                                                                                       TBC parameters *****/
TBC_HCLRTAB 0
                                                                                                                                                           /***** DSR parameters *****/
                                                                                                                                                                                      ******
                                                                                           8444444
                                       388888
                                                                                                                                                                          ø
                                                                                                                                                                                             0
                                                                                                                                                                                                                             0 6
                                                                                                                                                                                                          CTC_HCLRTABSALL
                                                                                                                                                                                                                                    TBC_HCLRTABSALL
                                                                                                                                                                                      /***** CTC parameters
idefine CTC_HSETTAB
                                                                                                                                                                                                                                                            17.
                                                                                                                                                                                                    CTC_HCLRTAB
                                                                                                         SCR CLR2BG
                                                                                                                SCR CLR3BG
                                                                                                                      #define SCR_CLR4BC
                                                                                                                            SCR_CLR5BC
                                                                                                                                   SCR_CLR6BC
                                                                                            SCR_CLR0BG
                                                                                                  SCR CLR1BG
                                                                                                                                         SCR CLR7BG
                                       #define SCR_CIR1
#define SCR_CIR2
#define SCR_CIR3
                                                                        SCR CLR6
                                                            define SCR_CLR4
                                                                  SCR CLRS
                               define SCR CLR0
                                                                                                                                                                          #define DSR CPR
                                                                                                                                                                                                                                                       N C S M
                            names
                                                                                                  #define #
                                                                 #define
#define
                                                                                            #define
                                                                                                                #define
                                                                                                                             #define
                                                                                                                                                                                                                       /44444/
                                                                                                                                                                                                                              define
                                                                                                                                                                                                                                                        Idefine
                                                                                                                                                                                                                                                                     define
                                                                               #define
                                                                                                                                   #define
                                                                                                                                         Hefine
                                                                                                                                                                                                    define
                                                                                                                                                                                                          define
                                                                                                                                                                                                                                    define
                                                                                                                                                                                                                                                 ******/
                                                                                                                                                                                                                                                              define
                                                                                                                                                                                                                                                                                  #end1f
                    8
```

```
/* this controller not valid at this time *
                      /* key transition triggers */
/* time trigger (vertical blank units) */
/* X distance trigger */
/* Y distance trigger */
                                                                                                                                                                                                                                                                                                 /* allocated by another user */
                                                                                                                            (CHE NONSTEP+0)
                                                                                                                                   (CMD_NONSTD+1)
(CMD_NONSTD+2)
                                                                                                                                                  (CMD_NONSTED+3)
(CMD_NONSTED+4)
8 16:36 1985 devices/gameport.h Page 1
                                                                                                                                                                       GamePort structures *****/
                                                                                                                                                                                                        (1 < < 0)
                                                                                                                                                                                                                       (1<<1)
                                                                                                                                                                                                                                                                                       /***** Controller Types *****/
#define GPCI_ALLOCATED -1
#define GPCI_NOCONTROLLER 0
                                                                                    Gamma-Port public definitions
                                                                                                                                                                                                                                                                                                                                                                     -
                                                                                                                   CamePort commands
                                                                                                                                                                                                                                                                                                                      GPCT_MOUSE
GPCT_RELJOYSTICK
GPCT_ABSJOYSTICK
                                                                                                                                 GPD_ASKCTYPE
GPD_SETCTYPE
GPD_ASKTRIGGER
GPD_SETTRIGGER
                                                                                                                                                                                                                                                                                                                                                           /*****/
#define GPDERR_SETCTYPE
                                                                                                                                                                                            CPTB_DOWNEYS
CPTE_DOWNEYS
CPTB_UPKEYS
CPTE_UPKEYS
                                                                                                                          CPD_READEVENT
                                                                                                                                                                                                                                 struct GamePortTrigger
                                                                                                                                                                                                                                          UMCRD got_Keys;
UMCRD got_Timeout;
UMCRD got_XCelta;
UMCRD got_XCelta;
                                                                                                                                                                                      got_Keys */
                        #ifndef
#define
                                                                                                                   /*****/
                                                                                                                                                                      ******/
                                                                                                                           define
                                                                                                                                 #define
                                                                                                                                          define
                                                                                                                                                define
                                                                                                                                                        define
                                                                                                                                                                                              define
                                                                                                                                                                                                                    define
                                                                                                                                                                                                      define
                                                                                                                                                                                                             define
                                                                                                                                                                                                                                                                                                                      define
                                                                                                                                                                                                                                                                                                                              define
                                                                                                                                                                                                                                                                                                                                    #define
                                                                                                                                                                                                                                                                                                                                                                                   Pend1f
                        6
                                                                                                                                                                                                                                                                                                                                     4444385
 80
```

```
/* some Requester activity has taken place. See Codes REQCLEAR and REQSET * #define IECLASS_REQUESTER 0x09
                                                                                                                                                                                                                                                                                                                                                                                          /* select button pressed down over a Cadget (address in ie_EventAddress) |*/
#define IECLASS_CADCETDOWN 0x07
                                                                                                                                                                                                                                                                                                                                                                                                                   /* select button released over the same Gadget (address in ie_EventAddress)
                                                                        /* inputerent inputerent in //
                         /* this is a Menu Number transmission (Menu number is in ie_Code) */
*define IECLASS_MENULIST 0x0A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /* the Window pointed to by ie_EventAddress needs to be refreshed */#define IECLASS_REFRESHWINDOW 0x0D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /* User has selected the active Window's Close Gadget */
                                                                                                                                                                                                                                                                                                  game port device */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /* the window is about to be been made active */
#define IECLASS_ACTIVEWINDOW 0x11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /* the window is about to be made inactive */
#define IECLASS_INACTIVEWINDOW 0x12
                                                                                                                                                                                                                                                                            /* A raw keycode from the keyboard device */
#define IECLASS_RAWKEY 0x01
                                                                                                                                                                                                                                                                                                                                                                                                                                   0×08
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0x0B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0×0E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0×0F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0×10
devices/imputevent.h Page 1
                                                                                                                                                                                                                                                                                                                                        0x03
                                                                                                                                                                                                                                                                                                                                                              0x04
                                                                                                                                                                                                                                                                                                                                                                                      0x0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ox
OX
OX
                                                                   Commodore-Amiga, Inc.
                                                                                                                                                                                                                                                                    0×00
                                                                                                                                                                                                                    constants -----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /* new preferences are available */
                                                                                                                                                                                                                                             /* ---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /* this Window has a new size */
                                                                                                                                                                                                                                                                                                        from the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ^{\prime *} the disk has been inserted ^{*}/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /* the disk has been removed */
                                                                                                                                                                                                                                                                                                                                                   /* A Pointer Position report */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         #define IECLASS_DISKINSERTED
                                                                                                                                                                                                                                                                                                                            /* A private console event */
#define IECLASS_EVENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   IECLASS_DISKREMOVED
                                                                                                                                                                                                                                              ImputEvent.ie_Class
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IECLASS_CLOSEWINDOW
                                                                                                                                                                        DEVICES_TIMER_H
                                                                                                                                                                                                                                                                                                                                                                 IECLASS POINTERPOS
                                                                                                                                                                                    #include "devices/timer.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IECLASS_NEWPREFS
                                                                                                                                                                                                                                                                                                                                                                                                                                    IECLASS_CADGETUP
                                                                                                                           input event definitions
                                                                                                                                                                                                                                                                                                                   #define IECLASS_RAWMOUSE
                                                                                                                                                                                                                                                                                                         /* The raw mouse report
                                                                                                                                                                                                                                                          input event */
                                                                                                                                                                                                                                                                                                                                                                                       Edefine IECLASS_TIMER
                                                                                                                                                                                                                                                                      IECLASS_NULL
                                                                                                                                                                                                                                                                                                                                                                            /* A timer event */
8 16:37 1985
                                                                                                                                                                                                                                                            A NOP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      define
                                                                                                                                                                                                                          ·----/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           tdefine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mefine
                                                                                                                                                                                                                                                                         define
                                                                                                                                                                            #1fndef
                                                                                                                                                                                                    #end1f
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            4000860
                                                                                                                                                     2
   200
```

```
(CCD_NONSID+1)
(CCD_NONSID+1)
(CCD_NONSID+3)
(CCD_NONSID+4)
(CCD_NONSID+5)
(CCD_NONSID+6)
(CCD_NONSID+6)
(CCD_NONSID+6)
                                                                                                                               O+CLISNON CHO
                                           Commodore-Amiga, Inc
                                                                             input device command definitions
devices/imput.h Page 1
                                                                                                                               IND_ADDHANDLER
IND_REMHANDLER
IND_SETTRESH
IND_SETTRESH
IND_SETPERIOD
IND_SETPERIOD
IND_SETPERIOD
IND_SETPERIOD
IND_SETPERIOD
                                                                                                  #ifndef EXEC_IO_H
#include "exec/io.h"
 8 16:37 1985
                                                                                                                                 define
                                                                                                                                                                    define
                                                                                                                                        define
                                                                                                                                               define
                                                                                                                                                       define
                                                                                                                                                             define
                                                                                                                                                                            define
                                                                                                                                                                                   #define
                                                                                                                   #end1f
                                                                                                                                                                                                end1f
                                            80
```

```
/* the pointer position for the event
                                                                                                                                                                                                      event
                                                                                                                                             /* the chronologically next event /* the input event class */ * optional subclass of the class */ * the input event code */ * the input event code */ * qualifiers in effect for the event
                                                                                                                                                                                                qualifiers in effect for the
                                                                                                                                                                                                                                                                                                    /* the system tick at the event
                                                                                                                                                                                                                                                                                                                                      1e_X le_position.le_xy.le_x
1e_Y le_position.le_xy.le_y
1e_EventAddress le_position.le_addr
                                    IEQUALIFIER LEUTION 0x1000
IEQUALIFIER REUTION 0x2000
IEQUALIFIER MEUTION 0x4000
IEQUALIFIER RELATIVENCUSE 0x8000
 devices/imputevent.h Page 3
                                                                                                                             struct ImputEvent {
   struct ImputEvent *ie_NextEvent;
                                                                                                                                                                                                                                                                                                  struct timewal ie TimeStamp;
                                                                                                      /*----- ImputEvent -----
                                                                                                                                                                                               1e_Qualifier;
                                                                                                                                                        1e_Class;
ie_SubClass;
                                                                                                                                                                                   te_Code;
                                                                                                                                                                                                                                     te,X
                                                                                                                                                                                                                                                  1e_y;
                                                                                                                                                                                                                                                                          1e_addr;
                                                                                                                                                                                                                                                                                       le position;
                                                                                                                                                                                                                                    1080
                                                                                                                                                                                                                                              FORD
                                                                                                                                                                                                                                                            te_xy;
8 16:37 1985
                                                                                                                                                                                UMORD
                                                                                                                                                                                            UMORD
                                                                                                                                                                                                            union
                                                                                                                                                        UBYTE
                                                                                                                                                                   UBYTE
                                                                                                                                                                                                                        struct
                                    #define
                                                    define
                                                                define
                                                                             #define
                                                                                                                                                                                                                                                                          APIR
                                                                                                                                                                                                                                                                                                                                        define
                                                                                                                                                                                                                                                                                                                                                   #define
                                                                                                                                                                                                                                                                                                                                                                 #define
                                                                                                                                                                                                                                                                                                                                                                                          #end1f
                                                                                                                                                                                                                                                                                                              ä
                                                                                                                1119
120
121
122
123
124
125
126
127
128
130
131
                                                                                                                                                                                                                                                                                                            134
135
137
137
139
```

```
•
                                                                                                                                                                                                                                                                                                                                                                                                                 Suado
                                                                                                                                                                                                                                                                                                                                                                                                                                            #define IECODE_REGSET 0x01
/* REQCLEAR is broadcast when the last Requester clears out of the Window
#define IECODE_REQCLEAR 0x00
                                                                                                                                                                                                                                                                                                                                                                               0x01 /* active input window changed */
                                                                                                                                                                                                                                                                                                                 /* also uses IECODE_UP_PREFIX */
                                                                                                                                                                                                                                                                                                                                                                                                  /* IECLASS_REQUESTER Codes */
/* REQSET is broadcast when the first Requester (not subsequent ones)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IRRULEVENT. ie_Qualifier --- */
IEQUALIFIER_LSHIFT 0x0001
IEQUALIFIER_CAPSLOCK 0x0004
IEQUALIFIER_CAPSLOCK 0x0008
IEQUALIFIER_CONTROL 0x0008
IEQUALIFIER_LALT 0x0010
IEQUALIFIER_LALT 0x0040
IEQUALIFIER_COMPAND 0x0040
IEQUALIFIER_NOMERICPAD 0x0100
IEQUALIFIER_NUMERICPAD 0x0100
IEQUALIFIER_REPRAT 0x02000
IEQUALIFIER_NUMERICPAD 0x0100
IEQUALIFIER_NUMERICPAD 0x0100
IEQUALIFIER_NUMERICPAD 0x0100
IEQUALIFIER_NUMERICPAD 0x0200
8 16:37 1985 devices/imputewent.h Page 2
                                                                                                                               0x00
0x77
0x78
0x78
                                                                                                                                                                                                                                                                                                               0x68
0x69
0x6A
0xFF
                                                      0×12
                                                                                                                                                                                                      0x1F
0x20
0x7E
0x7F
0x80
0x9F
0xA0
                                                                                                                            IECODE_VEY_CODE_FIRST
IECODE_COPE_CODE_LAST
IECODE_COPE_CODE_LAST
IECODE_COPE_CODE_LAST
                                                                                                                                                                                         IECODE_CO_FIRST
IECODE_ASCII_FIRST
IECODE_ASCII_LAST
IECODE_ASCII_DEL.
IECODE_CI_FIRST
IECODE_CI_FIRST
IECODE_CI_FIRST
IECODE_LATINI_FIRST
IECODE_LATINI_LAST
                                                                                               --- ImputEvent.ie_Code
                                                                                                                    IECODE UP PREFIX
                                                                                                                                                                                                                                                                                                                                                                              #define IECODE_NEWACTIVE
                                                                                                                                                                                                                                                                                                  /* IECLASS RAMPOUSE */
#define IECOE_LEUTTON
#define IECOE_REUTTON
#define IECOE_MEUTTON
                                                                                                                                                                                                                                                                                                                                               IECODE_NOBUTION
                                          /* the last class */
#define IECLASS_MAX
                                                                                                         IECLASS RAWREY */
                                                                                                                                                                                                                                                                                                                                                                   /* IECLASS_EVENT */
                                                                                                                                                                                 /* IECLASS_ANSI */
                                                                                                                                                                                                                                                                                                                                                                                                                        in the Window
                                                                                                                                                                                                                                                                                                                                               define
                                                                                                                                        define
                                                                                                                                                  #define
                                                                                                                                                             #define
                                                                                                                                                                                             define
                                                                                                                               define
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                                                                                                                                                                                                                                                            define
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            #define
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          #define
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             define
                                D
```

| !!fndef DEVICES.KEYMAP.H define DEVICES.KEYMAP.H define DEVICES.KEYMAP.H Commodore-Amiga, Inc. | | ions | *************************************** | | | | /* note that SHIFT+ALT+CTRL is VANILLA | | | |
|--|---|--|---|---|--|---------------------------|---|------------------------------------|---|--|
| 8 - Am | | definit | *** | ı: | | | | 93 | | |
| DEVICES KEYMAP_H ALLALALALALALALALALALALALALALALALALALA | /s Keymap.h /4 /keymap.h /stattatatatatatatatatatatatatatatatatat | ************************************** | *************************************** | KeyMap { lon_LokeyMapTypes; lon_LokeyMap; lon_Locapsable; | km_LoRepoatable; km_HiKeyMap; km_HiKeyMap; km_HiCapsable; km_HiRepoatable; | KCB_NOP 7 KCF_NOP 0x80 | KC_NOQUAL 0 KC_VANILLA 7 KCE_SHIFT 0x01 KCE_ALT 0x02 KCE_ALT 0x02 KCE_CONTROL 0x04 KCE_DOMNUP 3 KCE_DOMNUP 0x08 | KCF_STRING 6 KCF_STRING 0x40 | • | |
| #ifndef DEV #define DEV /************************************ | *************************************** | /*********** * console.d | ****** | struct Key APTR km APTR km APTR km | | #define KC #define KC | #define KC_N #define KC_N #define KCE_ #define KCE_ #define KCE_ #define KCE_ #define KCE_ | #define KC #define KC #endif | | |

| | 1 1 2 1 | 8 | EXEC_IO_H "exec/10.h" | KBO, READEVENT KBO, READMATR IX KBO, ADVRESETHA KBO, RESETHANDL | | |
|--|---|--|--------------------------|--|--|--|
| DEVICES_KEYBOARD_H DEVICES_KEYBOARD_H | Comodore-Amiga, keyboard.h ************************************ | Keyboard device command definitions | | NDLER (NDLER ERDONE) | | |
| *************************************** | r, Inc. sessessesses sessesses | nitions | | (CAD_NONSTD+0) (CAD_NONSTD+1) (CAD_NONSTD+3) (CAD_NONSTD+3) (CAD_NONSTD+4) | | |
| tifndef DEVICES_KEYBOARD_H tdefine DEVICES_KEYBOARD_H (Attitutettitititititititititititititititi | /a Commodore-Amiga, Inc. /a keyboard.h /assatatatatatatatatatatatatatatatatatat | * Keyboard davice command definitions * *********************************** | | ଼ ନ୍ଦ୍ରକୁ | | |

```
/* Sex of voice */
/* Pointer to audio alloc maps */
/* Number of audio alloc maps */
/* Volume. 0 (off) thru 64 */
/* If non-zero, generate mouths */
/* Mich ch mask used (internal) */
/* Num ch masks used (internal) */
/* For alignment */
                                                      Standard Write request */
                                                                                                          /* Pitch mode
      devices/narrator.h Page 2
                                                                                                                                                                                                                           Standard Read request
                                                                                                                                                                                                                                                                                                                              #endif DEVICES_NARRATOR H
                                                                                                                         *ch_masks;
rm_masks;
                                                                              struct IOStdReq
                                                                       struct narrator_rb
                                                                                                                                                   sampfreq;
                                                                                                                                                                   charmask;
                                                                                                                                                                           numchan;
                                                                                                                                                                                                                                            struct mouth rb {
                                                                                                                                                           mouths;
                                                                                                                                          volume;
                                                                                                 UMCRD pitch;
UMCRD mode;
                                                                                       UMORD rate;
                                                                                                                  Sex;
                                                                                                                                                                                    pad;
      8 16:37 1985
                                                                                                                UMOMO
                                                                                                                                UMORD
UMORD
UMORD
                                                                                                                                                                 UBYTE
                                                                                                UBYTE
                                                                                                                                                         UBYTE
                                                                                                                                                                                                                           *
                             660
                                Read for mouth without write first
Can't open, deferred expunge bit set
                                                                                                                                                                                                                                                                                                                    *
                                                                                                                                                                                                                                                                                                                                   *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       **
                                                                                                                                                                                                                                                                                                       /* Default pitch */
/* Default speaking rate (vpm) */
/* Default sampling frequency (Hz) */
/* Male vocal tract */
/* Female vocal tract */
/* Natural pitch contours */
/* Monotone */
/* Default sex */
                                                                                                                                                                                                                                                Sampling frequency out of bounds Volume out of bounds
                                                                                                                                                                    Can't allocate audio channel (s)
                                                                                                                                                                                                                                                                                                                                                                                                                                      >>
                                                                                                                                                                                                                                                                                                                                                                                                                                   /* Minimum speaking rate /* Maximum speaking rate /* Minimum pitch /* Maximum pitch /* Minimum sampling frequency /* Maximum sampling frequency /* Minimum volume .*/
                                                                                                                                                                                                      Phoneme code spelling error
                                                                                                                                                    Error in MakeLibrary call
                                                                                                                                     Can't allocate memory
Can't open audio device
                                                                                                                                                                              Unimplemented command
                                                                                                                                                                                                                       Pitch out of bounds
                                                                                                                                                                                                                Rate out of bounds
                                                                                                                                                             Unit other than 0
                                                                                                                                                                                                                                                                                                                                                                                     /* Default mode
                                                                                                                                                                                                                                        Mode not valid
                                                                                                                                                                                                                                                                                       /* Imput parameters and defaults */
                                                                                                                                                                                                                               Sex not valid
                                                   Commodore-Amiga, Inc
8 16:37 1985 devices/narrator.h Page 1
                                                                                                                                                                                                                                                                                                                                                                                                                    -
                                                                                                                                                                                                                                                                                                                                                                                                                    Parameter bounds
                                                                                                                    Error Codes
                                                                                                                                                                                                                                                                                                                                                                                   NATURALFO
                       DEVICES NARRATOR H
                                                                                                                                                                                                                                                                                                                                 22200
                                                                                                                                                                                                                                                                                                                                                                                                                                    40
400
65
320
5000
0
64
                                                                                                                                                                                     æ
                                                                                                                                                                                             6
                                                                                          #include "exec/io.h"
#endif
                                                                                                                                                                     ND_CantAlloc
                                                                                                                                            ND_NoAudLib
                                                                                                                                                                             ND_Unimpl
ND_NoWrite
                                                                                                                                                                                             ND_Expunged
ND_PhonErr
                                                                                                                                                                                                                       ND PitchErr
                                                                                                                                                     ND_MakeBad
                                                                                                                                                             ND_UnitErr
                                                                                                                                                                                                             ND RateErr
                                                                                  #1fndef EXEC IO H
                                                                                                                                                                                                                                       ND_ModeErr
                                                                                                                                                                                                                                               ND_FreqErr
                                                                                                                                                                                                                              ND SexErr
                                                                                                                                                                                                                                                                                                                                                                                                                                 #define MINRATE
#define MANRATE
#define MINPITCH
#define MINFREQ
#define MINFREQ
#define MANFREQ
#define MANOL
#define MANOL
                                                                                                                                                                                                                                                                                                                                                        NATURALEO
                                                                                                                                                                                                                                                      ND VolErr
                                                                                                                                                                                                                                                                                                                                                                  ROBOTICEO
                                                                                                                                    #define ND_NoMem
                                                                                                                                                                                                                                                                                                        DEFPITCH
                                                                                                                                                                                                                                                                                                                       DEFVOL
DEFFREQ
                                                                                                                                                                                                                                                                                                                                                                          DEFSEX
                                                                                                                                                                                                                                                                                                                DEFRATE
                                                                                                                                                                                                                                                                                                                                                 FEMALE
                                                                                                                                                                                                                                                                                                                                        MALE
                         #1fndef
                                                                                                                                                             define
                                                                                                                                                                     define
                                                                                                                                             define
                                                                                                                                                     define
                                                                                                                                                                             define
                                                                                                                                                                                     define
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                                                                                                                                                                                                                                                                                                        #define
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                                                                                                                                                                                                                                                                                                                                                                          define
                                                                                                                                                                                                                                                                                                                                                                                  define
                                                  45978601
```

struct narrator_rb volce; /* Speech IGRB */
UBYTE width; /* Width (returned value) */
UBYTE sheight; /* Height (returned value) */
UBYTE shape; /* Internal use, do not modify */
UBYTE pad; /* For alignment */ *

>>

Speaking rate (words/minute) Baseline pitch in Hertz /* Standard IORB

90

```
/* ParFlags non-exclusive access bit */
non-exclusive access mask */
(not yet implemented) */
* (not yet implemented) */
* (not yet implemented) */
* EQE mode enabled mask */
* IO_FLACS rept-queued bit */
* rept-queued bit */
* rept-queued mask */
* " rept-queued or-current bit */
* " rept-qued-or-current bit */
* " rept-qued-or-current mask */
* " printer in busy toggle mask */
* " printer in busy toggle mask */
* " paper out mask */
* " paper out mask */
* " printer selected bit */
                                                        /* (not used) ilag excessory
/* status of parallel port and registers
/* see PARFLACS bit definitions below *)
/* see PARFLACS bit definitions below *)
                                                                                                                                                                                                                                                                                                                                                                                                   printer selected bit */
printer selected mask */
                                                                                              IOPArray io PlermArray; /* termination character array
                                                    (not used) flag extension area */
                                                                                                                                                                                                                                                                                                                                                                                                                                               "parallel.device"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (CHO_NONSTD)
(CHO_NONSTD+1)
devices/parallel.h Page 2
                                                                                                                                                                                      (1<<3)
                                                                                                                                                                                                                                                                                                                                                                                         (1<<1)
                                                                                                                                                                                                                                                                                                     1<<4)
                                                                                                                                                           (1<<5)
                                                                                                                                                                                                                   1<<1)
                                                                                                                                                                                                                                              1<<6)
                                                                                                                                                                                                                                                                         1<<5)
                                                                                                                                                                                                                                                                                                                                  1<<3)
                                                                                                                                                                                                                                                                                                                                                               1<<2)
                                                       lo_PExtflags;
                                                                                      lo ParFlags;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Hendif IDEVICES_PARALLEL_H
                                                                        lo_Status;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          #define ParErr_DevBusy
#define ParErr_BufTooBig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     define ParErr_InvParam define ParErr_LineErr define ParErr_NotOpen define ParErr_PortReset
                                                                                                                                                           PARE_SHARED
PARE_RAD_BOOCIE
                                                                                                                                                                                      PARE RAD BOOGIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PDCHD_QUERY
PDCHD_SETPARAMS
                                                                                                                                                                                                                                                                                                                                                                            IOPTE PAPEROUT
                                                                                                                                                                                                                                 IOPARB_QUEUED
IOPARF_QUEUED
IOPARB_ABORT
                                                                                                                                                                                                                                                                           IOPARE ABORT
IOPARB ACTIVE
IOPARE ACTIVE
IOPARE ACTIVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             define ParErr_InitErr
                                                                                                                                                                                                    PARE ECEMODE
PARE ECEMODE
                                                                                                                                                                                                                                                                                                                                  TOPTE RWDIR TOPTE PBUSY
                                                                                                                                               PARB SHARED
                                                                                                                                                                                                                                                                                                                                                                COPTE_PBUSY
                                                                                                                                                                                                                                                                                                                                                                                                                                                   #define PARALLELNAME
                                                                                                                                                                                                                                                                                                                                                                                                                         IOPTE_PSEL
                                                                                                    struct
                                                                        UBYTE
                                                           ULONG
  8 16:37 1985
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                define
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                define
                                                                                                                                                                                                                                                                                                                                                                                                                          #define
                                                                                                                                                                                                                                                                                                                        define
                                                                                                                                                                                                                                                                                                                                                   define
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                                                                                                                                                                             define
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                                                                                                                                                                                                                      define
                                                                                                                                                                                                                                     define
                                                                                                                                                                                                                                                  define
                                              9
                                                                                                                                                                                                                                                                                                                                                                                                          8
```

```
an IOExtPar-sized structure or you may overlay innocent memory !! */
                        /* CAUTION !! IF YOU ACCESS the parallel.device, you MUST (!!!!) use
                                                                                                                                                                                                                                                                                                             #Header: parallel.h,v 25.0 85/03/27 19:14:15 tomp Exp
                                                                                              external declarations for Parallel Port Driver
                                        Commodore-Amiga, Inc.
devices/parallel.h Page 1
                                                                                                                                                                                                                                                                                                                                                                            IOStdReq IOPar;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          10 Unit
10 Command
10 Flags
10 Error
IOStdExt
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IOExt
10_Device
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     10 Length
10 Data
10 Offset
                                                                                                                                                                                                                                                                                                                                                                                                                                                        ReplyPort
Milength
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              10_Actual
                                                                                                                                                                                                         HOSTING DEVICES PARALLEL H
                                                                                                                                                                                                                                                                   ICPArray {
ULONG PTermArray0;
ULONG PTermArray1;
                                                                                                                                                                                                #1 fndef DEVICES_PARALLEL_H
                                                                                                                                                                                                                                      #include "exec/io.h"
|endif | IEXEC_IO_H
                                                                                                                                                                                                                              EXEC_10 H
                                                                                                                                                                                                                                                                                                                                                                  IOExtPar
                                                                                                                     SOURCE CONTROL
                                                                                                                                                            $Locker:
  8 16:37 1985
                                                                                                                                                                                                                                                                                                                                                                    struct
                                                                                                                                                                                                                                                                     struct
                                                                                                                                                                                                                             #1fndef
                                                                                                                                                                                                                                         80
```

```
*
                                                                                                                                                                                                                                                                              >>
                                              of)
                                                                                                                                                                                                                                                                              (special)
(special)
                                                                                                                                                                                                                                     p proportional clear +++ */
E set proportional offset ISO */
E auto left justify ISO */
E auto right justify ISO */
E auto full justify ISO */
E auto justify off
E letter space (justify) ISO */
E letter space (justify) ISO speci
                                                                                                                                                         ```
 180 %
180 %
180 %
180 %
180 %
180 %
 >>>>>>
 : :
 ‡ 8 8
2
 ‡
 ‡
 ‡
 + DBC +
 ‡
 ‡
 center)
 ESC[2v superscript on
ESC[1v superscript off
ESC[4v subscript on
ESC[3v subscript off
ESC[0v normalize the line
 BSC[6"z shadow print on
BSC[5"z shadow print off
BSC[4"z doublestrike on
BSC[3"z doublestrike off
BSC[3"z doublestrike off
BSC[1"z NLQ on
BSC[1"z NLQ off
 1/8" line spacing
1/6" line spacing
set form length n
 * ESC (N Charles) Clark

* ESC (E Danish I char set

* ESC (E Inalish Char set

* ESC (Z Spanish Char set

* ESC (J Japanese Char set

* ESC (J Japanese Char set

* ESC (S Norwelgn char set

* ESC (C Danish II char set
 perf skip n (n>0)
perf skip off
 T&B margins
 US char set
French char set
German char set
UK char set
Danish I char set
 proportional off
 partial line up
partial line down
 LGR margin
 Right margin set
 proportional on
 Left margin set
 Bottom marg set
 word fill (auto
 Pop margin set
 off
 margins
 enlarged on
enlarged off
 condensed
 US char
 Clear
devices/printer.h Page
 ESCÍNE ESCÍNE
 ESC[3v c
ESC[6v e
ESC[5v e
 ESC[Pn1;]
ESC[Pn1;]
ESC#3
 ESC[2p
ESC[1p
 ESC[nq
ESC[0q
 ESC (B
 五世
 ESC[1
ESC[4]
ESC[6]
ESC[6]
ESC[6]
 ESC#9
 ESC#0
 ESC#2
 ESC
 20
20
20
 332
 $2222
$2222
$4
 28288
 65
63
64
65
65
 aSHORP6
 #define aVERP1
#define aVERP1
#define aSLPP
 aPROP1
 aDEN6
aDEN5
aDEN4
 aDEN3
aDEN2
 aPROP2
 #define aJFY5
#define aJFY6
#define aJFY6
#define aJFY1
#define aJFY1
 aPERF
aPERF0
 aSUS3
 aDEN1
 aSUS4
 aENT3
 aFNTS
aFNT6
 aSUS1
 aFNT8
 aSUS0
 aPLD
 aPLU
 aTSS
16:37 1985
 #define
 Idefine
 define
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 tdefine
 define
 define
 define
 define
 define
 Idefine
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 #define
 define
 Idefine
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 define
 define
 define
 define
 define
 define
 define
 define
 define
 #define
00
```

```
>>>>>
 >>>>
 #Header: printer.h,v 1.2 85/10/09 16:16:10 kodlak Exp
 Solor
 Solor
 set foreground set background
 5
 ESC[0m normal char set
 24m underline off
 condensed fine
 [22m boldface off
 ESC[0w normal pitch
ESC[2w elite on
ESC[1w elite off
ESC[4w condensed fine
 23m italics off
 (CHD_NONSTD+1)
(CHD_NONSTD+1)
(CHD_NONSTD+2)
 4m underline on
 Im boldface on
 (3m italics on
 initialize
 reverse lf
 Commodore-Amiga, Inc.
 return, 1f
 printer device command definitions
devices/printer.h Page 1
 command definitions */
 ESC[22m bo
SCR30-39
SCR40-49
 ESC.
ESC#1
ESC#
ESC#
ESC#
 ESC
 ESC
 PRD_RAWWRITE
PRD_PRICCHMAND
PRD_DUMPRPORT
 "exec/nodes.h"
 'exec/lists.h"
 'exec/ports.h"

 EXEC NODES H
 EXEC LISTS H
 EXEC PORTS H
 Source Control
 42327

 aSHORP0
 aSHORP1
aSHORP4
 aSCR3
aSCR23
aSCR23
aSCR24
aSCR24
 aSGR1
aSGR22
 $Locker:
 PIND
PRET
 PRIN
 /* printer
16:37 1985
 include
 include
 Include
 #ifndef
#define
 lifndef
 11 fndef
 define
 #define
 11 fndef
 Idefine
 Idefine
 define
 #define
 define
 Idefine
 define
 define
 define
 define
 define
 Holine
 define
 Idefine
 define
 #define
 Mefine
 define
 #define
 #end1f
 end1f
 Pendif
œ
 Dec
```

```
/* user canceled a printer timeout */
/* printer carnot output graphics */
/* cannot invert hold & modify print */
/* print dimensions illegal */
/* print dimensions too large */
/* no memory for internal variables */
/* no memory for print buffer */
 canceled a printer timeout
 S
Dec 8 16:37 1985 devices/printer.h Page
 PDERR INTERNALMENORY 6
 PDERR BADDIMENSION
4
PDERR DIMENSIONOVELOM
 PDERR BUFFERMEMORY
 PDERR_NOTCRAPHICS
 PDERR_INVERTHAM
 PDERR_CANCEL
 define
define
 define
 define
 define
 define
 define
 endif
 169
170
171
172
173
174
175
```

```
/* DestCols specified in 1/1000" */
/* DestRows specified in 1/1000" */
/* make DestCols maximum possible */
/* make DestRows maximum possible */
/* DestCols is fraction of FULLGOLS */
/* DestRows is fraction of FULLGOLS */
/* ensure correct aspect ratio */
00 /* masks out density bits */
/* lowest res */
/* next res */
/* next res */
/* highest res */
 fourth command parameter */
 command parameter */
 graphics viewport modes */
 third command parameter */
 * source x origin */
* source y origin */
* source x width */
* source x height */
* destination y height */
* destination y height */
* option flags */
 second command parameter
 error or warning num */
 device node pointer */
unit (driver private) */
device command */
 error or warning num */
 unit (driver private)*/
device command */
 device node pointer
 printer command */
first command para
 raster port */
 color map */
 # ESCH Set horiz tab
ESCJ Set vertical tabs
ESC[09 Clr horiz tab
ESC[39 Clear all h tab
ESC[49 Clr vertical tabs
ESC[44 Clr all v tabs
ESC#4 Clr all h & v tabs
ESC#5 Set default tabs
ESC#5 Set default tabs

 SPECIAL DENSITYMASK 0xf00
 RastPort *10_RastPort;
 ColorMap *10_ColorMap;
 0x002
0x004
0x008
 0x200
0x300
8 16:37 1985 devices/printer.h Page
 0x010
0x020
 0×080
 10_Message;
410_Device;
410_Unit;
 SPECIAL DENSITY1
SPECIAL DENSITY2
SPECIAL DENSITY3
 SPECIAL DENSITY4
 SPECIAL FULLROWS
 SPECIAL FRACCOLS
 SPECIAL FRACROMS
 SPECIAL FULLOOLS
 to PrtCommand;
 lo SrcHelont;
 1o DestCols;
1o DestRows;
 SPECIAL MILLOILS
 SPECIAL MILROWS
 SPECIAL ASPECT
 to_SrcWidth;
 lo_Special;
 to Command;
 lo_Command;
 Lo Modes;
 to Flags;
 lo Flags;
 to Error
 to Error
 10 Parm
 10 Parm2
 10 Parm3
 to SrcX;
 10 Parmi
 to SrcY
 Message
 struct IOPrtCmdReq
 Device
 Shit
 atrs
avrs
arbco
arbco
arbco
arbco
arbco
arbco
arbco
arbco
arbco
arbcoli
 PEXTEND
 struct
UNORD
UBYTE
BYTE
 struct
 LONG
LONG
UNCRD
 struct
 ULONG
 UMORD
 GWORD
 struct
 GMOMS
 struct
 struct
 BYTE
UMORD
UBYTE
 UBYTE
UBYTE
UBYTE
 UMORD
 #define
#define
 UBYTE
 define
 Idefine
 define
 define
 Idefine
 define
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 161
162
163
164
166
166
169
 511911
 8
 - D-12
```

```
pd_PrinterSegment; /* the printer specific segment */
pd_PrinterType; /* the segment printer type */
PrinterSegment *pd_SegmentData; /* the segment data structure */
pd_PrintBuf; / the raster print buffer */
(*pd_PrintBuf; /* the vrite function */
(*pd_PBothReady)(); /* write function's done */
/* port I/O request 0 */
 struct Preferences pd.Preferences; /* the latest preferences */
UBYIE pd_PMaitEnabled; /* wait function switch */
 printer name, null terminated */
 and 1 for double buffering */
 /* timer I/O request */
/* and message reply port */
/* write task */
/* and stack space */
/* device flags */
 called before UnLoadSeg */
called at OpenDevice */
called at CloseDevice */
printer class */
 called after LoadSeg */
 DeviceData pd_Device;
MsgPort pd_Unit; /* the one and only unit */
pd_PrinterSegment; /* the printer specific a
 color class */

8 16:37 1985 devices/prtbase.h Page
 #define pd_PICR0 pd_lor0.pd_p0
#define pd_SICR0 pd_lor0.pd_s0
 #define pd PICR1 pd_lor1.pd_pl
#define pd_SICR1 pd_lor1.pd_sl
struct timerequest pd_TICR;
struct MsgPort pd_ICRPort;
struct MsgPort pd_ICRPort;
 *ped_PrinterName;
(*ped_Init)();
(*ped_Expunge)();
(*ped_Copen)();
(*ped_Close)();
ped_PrinterClass;
 UBYTE pd_Stk[P_STKSIZE];
UBYTE pd_Flags;
UBYTE pd_pad;
 struct PrinterExtendedData {
 0x800
 ped_ColorClass;
 union {
struct IOExtPar pd_p0;
struct IOExtSer pd_s0;
 struct loExtPar pd_p1;
struct loExtSer pd_s1;
 0×02
 PPC_BMALPHA 0
PPC_BMCEX 1
PPC_COLORGEX
 PrinterData {
 PPCB_GEX 0
PPCE_GEX 0x01
PPCB_COLOR 1
PPCE_COLOR 0x
 POC_BM
POC_YMC
POC_YMC_BW
POC_YMCBW
 #define P_STKSIZE
 > pd_lor0;
 } pd_lor1;
 union
 struct
BPTR
UMORD
struct
UBYTE
VOID
 struct
 #define
 define
 define
 define
 define
 #define
 #define
 define
 define
 define
 #define
 struct
 102
103
104
105
107
109.4
111
 5
 8
```

```
<u>,</u>
 struct DeviceData {
 struct Library dd_Device; /* standard library node */
 APTR dd_Segment; /* A0 when initialized */
 APTR dd_ExecBase; /* A6 for casec */
 APTR dd_CmdVectors; /* command table for device commands */
 APTR dd_CmdBytes; /* bytes describing which command queue
 UNORD dd_NumCommands; /* the number of commands supported */
 Commodore-Amiga, Inc.
8 16:37 1985 devices/prtbase.h Page 1
 * printer device data definition
 #ifndef LIBRARIES_DOSEXTENS_I
#Include "libraries/dosextens.h"
 #ifndef INTUITION_INTUITION_H #Include "intuition.h" #endif
 include "devices/parallel.h"
 include "exec/libraries.h"
 prtbase.h
 DEVICES_PARALLEL_H
 include "devices/serial.h"
 #ifndef DEVICES PRIMASE H
 DEVICES PRIBASE H
 "devices/timer.h"
 ifndef EXEC_LIBRARIES_H
 DEVICES_SERIAL_H
 DEVICES_TIMER_H
 "exec/nodes.h"
 'exec/lists.h"
 'exec/ports.h"
 include "exec/tasks.h"
 EXEC LISTS H
 Mitndef EXEC_NODES_H
 ifndef EXEC PORTS H
 1fndef EXEC_TASKS H
 ifndef I
 Include
 include
 Include
 11 finde f
 1 fndef
 #define
 1 fndef
 endif
 endif
 endif
 end1f
 andif
 endif
 endif
 andif
 endif
 ä
 888
 2
 80
```

```
/* an IOExtSer-sized structure or you may overlay innocent memory !!*/
 /* CAUTION !! IF YOU ACCESS the serial.device, you MUST (!!!!) use */
 /* array of termination char's */
/* to use,see serial.doc setparams */
 $Header: serial.h,v 25.0 85/03/27 19:14:15 tomp Exp
 external declarations for Serial Port Driver
 Commodore-Amiga, Inc.
8 16:37 1985 devices/serial.h Page 1
 10StdReq 10Ser;
 10_Unit
10_Command
10_Flags
 ReplyPort
MNLength
 to_Device
 io Actual
io Length
io Data
io Offset
 IOTArray {
ULONG TermArray0;
ULONG TermArray1;
 10_Error
10StdExt
 serial.h
 #1fndef DEVICES_SERIAL_H
 define DEVICES_SERIAL_H
 Name
 #ifndef EXEC_IO_H
#include "exec/io.h"
#endif !EXEC_IO_H
 struct IOExtSer
 SOURCE CONTROL
 struct
 ULONG
 UNDER
 $Locker: $
 STRUCT
APTR
 struct
 띄
 459786
 Dec
 number of raster rows in a raster dump */ number of dots maximum in a raster dump */ number of dots maximum in a raster dump */
 number of print columns available */
 /* printer extended data */
 horizontal dot density */
vertical dot density */
printer text command table */
 character sets */
 special command handler */
raster render function */
 /* (actually a EPTR) */
/* MDVEQ #0,D0 : RTS */
/* segment version */
/* segment revision */
 good write timeout */
 number of
 PrinterExtendedData ps_PED;

 devices/prtbase.h Page 3
 (*ped_Dospectal) ();
(*ped_Render) ();
ped_TimeoutSecs;
 ped_NumCharSets;
 ** * ped Commands
 struct PrinterSegment {
 ULONG ps_NextSegment;
 ULONG ps_runAlert;
 ped_MaxColumns;
 ped_MaxYDots;
ped_XDotsInch;
 oed YDotsInch
 ped_MaxXDots;
 ped_NumRows;
 ps_Version;
ps_Revision;
 struct
 ULONG
ULONG
UMORD
UMORD
 8 16:37 1985
 UBYTE UBYTE UNORD ULONG ULONG UNORD UNORD UNORD
 VOID VOID IONC
 char
):
#end1f
 ፝
 113
114
115
1116
1117
1120
1120
1121
1124
1126
1127
1129
1130
1130
1131
1133
 Dec
```

```
rgst-qued-or-current mask */
receive currently xOFF'ed bit */
receive currently xOFF'ed mask *
transmit currently xOFF'ed bit *
transmit currently xOFF'ed bit *
 break was latest input bit */
break was latest input mask */
break was latest output bit */
break was latest output mask */
status word RBF overrun bit */
 overrun mask
 rgst-qued-or-current bit */
 mask */
 rqst-queued mask */
rqst-aborted bit */
rqst-aborted mask */
 rqst-quewed bit */
 from read buffer
 status word RBE
 lost hob
 "serial.device"
8 16:37 1985 devices/serial.h Page 3
 IOSTE_MROTERREAK 1 (1<<1)
 IOSERF_BUFRREAD (1<<7)
 IOSTE_READBREAK 2
IOSTE_READBREAK (1<<2)
 (1<<3)
 (1<<5)
 (1<<6)
 (1<<4)
 IOSTE_XOFFREAD (1<<4)
 (1<<0)
 SerErr_DetectedBreak
 SerErr_DevBusy
SerErr_BaudMismatch
 IOSERE ACTIVE (:
 COSTB XOFEWRITE
 COSTE_XOFEWRITE
 SerErr_PortReset
 Ser Err ParityErr
 Ser Err_Buffover f1
 #endif IDEVICES_SERIAL_H
 COSERB_QUEUED
 SerErr_InvParam
 IOSERF_QUEUED
IOSERB_ABORT
 COSERB_ACTIVE
 COSTB_OVERRUN
 COSTE_OVERRUN
 SerErr_InvBaud
 Ser Err_Timer Err
 SerErr_LineErr
 SerErr_NotOpen
 COSERF_ABORT
 SerErr_InitErr
 SerErr_Bufferr
 Ser Err Noder
 Ser Err McCIS
 define SERIALNAME
 #define
 define
 define
 define
 define
 define
 #define
 define
 define
 define
 define
 define
 #define
 #define
 #define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 142
143
 8
```

```
* IMPORTANT !! DON'T CHANGE the long-word alignment of ANY of these fields !!
* You can add to the end if you must do something.
 xOn-xOff feature disabled bit */
xOn-xOff feature disabled mask */
 high-speed mode active bit */
high-speed mode active mask */
queue this Break loRgst */
queue this Break loRgst */
RS232 7-wire protocol */
RS232 7-wire protocol */
 xOn-xOff feature disabled bit
 parity feature enabled bit *
 parity feature enabled mask
 non-exclusive access bit */
non-exclusive access mask *
 EOF mode enabled bit */
 parity-enabled bit */
parity-enabled mask */
from read buffer bit */
 Terminal Ready
 transmit x-Offed
 receive x-Offed
 break received
 Data Set Ready
Clear To Send
 Carrier Detect
Ready To Send
 read overrun
 (CMD_NONSTD+1)
(CMD_NONSTD+2)
 SerFlags
 to Flags
 break sent
 CHE NOWSTE
 paper out
 follows:
 FUNCTION
 reserved
 select
 Data
 busy
8 16:37 1985 devices/serial.h Page 2
 port, as f
 SERE_TMIRE (1<<2)
SERB_PARTY_COD 1
SERE_PARTY_COD (1<<1)
SERB_PARTY_CON 0
SERE_PARTY_CON 1</td>

IOSERE_BUFRREAD 7

 1<<7)
 1<<6)
 1<<5)
 $$$$$$$
277772
 (1<<4)
 (1<<3)
 ğ
 3
 ğ
 <u>₹</u>
 <u>8</u> 8
 10€
 SDCHD_QUERY
SDCHD_BREAK
SDCHD_SETPARANS
 SERE XDISABLED
SERE XDISABLED
SERE EOFNOR
SERE SHARED
SERE SHARED
SERE SHARED
SERE SHARED
 lo ExtFlags;
 IOTArray to.
 10_StopBits;
 SERF_RAD_BOOGIE
 SERF_QUEUEDBRK
 SERB_QUEUEDBRK
 to Writelen
 /* status of serial
 lo_CtlChar;
 lo RBuffen;
 lo_BrkTime;
 10
11
12
13-15
 lo_Status
 lo_Baud;
 SERB_7WIRE
 struct
UBYTE
 ULONG
 GLONG
 GLONG
 ULONG
 UBYTE
UBYTE
UBYTE
 UMORD
UMORD
 tdefine
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 Idefine
 define
 define
 Idefine
 Idefine
 101
 103
D
```

```
/* normal # of cylinders */
/* max # cyls to look for during cal */
 normal # of cylinders */
 $Header: trackdisk.h,v 27.3 85/07/12 23:16:05 neil Exp $
 /* log TD_SECTOR */
 Commodore-Amiga, Inc.
8 16:37 1985 devices/trackdisk.h Page 1
 NUMETRACKS (NUMEYLS*NUMETRADS)
NUMEDNITS 4
 /*-- sizes before mfm encoding */
define TD_SECTOR 512
define TD_SECSHIFT 9 /*)
 80
(NUMCYLS+20)
11
 trackdisk.h
 #1fndef DEVICES_IRACIDISK_H
 Hole the DEVICES_TRACKDISK_H
 * Physical drive constants
 MAXIRITRY 10
 #include "exec/io.h"
#endif !EXEC_IO_H
 NUMBECS 11
NUMBEADS 2
 * Useful constants
 #1fndef EXEC_IO_H
 NUMEXICS
 MAXCYLS
 Source Control
 trackdisk.h
 $Locker: $
 define
 #define
 define
 define
```

```
$Header: timer.h,v 27.1 85/06/24 13:32:37 neil Exp
 /* IO_CCMMAND to use for adding a timer */
#define TR_ADTREQUEST CMD_NONSTD
#define TR_CETSYSTIME (CMD_NONSTD+1)
#define TR_SETSYSTIME (CMD_NONSTD+2)
 Commodore-Amiga, Inc.
devices/timer.h Page 1
 Modeline TIMERNAME "timer.device"
 struct timerequest {
 struct IORequest tr_node;
 struct timeval tr_time;
 timer.h
 #1fndef DEVICES_TIMER_H
#define DEVICES_TIMER_H
 /* unit defintions */
#define UNIT_MICROHZ 0
#define UNIT_VBLANK 1
 #endif DEVICES_TIMER_H
 #include "exec/io.h"
#endif EXEC_IO_H
 struct timewal {
 ULONG tv_secs;
 ULONG tv_micro;
 #1fndef EXEC_IO_H
 SOURCE CONTROL
 $Locker:
8 16:37 1985
 84888884444
 8
```

```
/* labels are TD_LABELSIZE bytes per sector */
Dec 8 16:37 1985 devices/trackdisk.h Page 3
 TOERR_BadSecPreamble
 TDERR_NotSpecified
 IDERR BadDriveType
 #endif DEVICES_TRACKDISK_H
 IDERR DiskChanged
 TDERR BadUnitNum
 TDERR DriveInUse
 IDERR_TooFewSecs
 DERR BadHdrSum
 TO LABELSIZE 16
 TDERR_BadSecSum
 TDERR BadSecHdr
 IDERR WriteProt
 DERR Souldrror
 DERR BadSecID
 Driver error defines
 DERR NoSecHdr
 TDERR NOMEN
 #define
 #define
 define
 tdefine
 #define
 define
 #define
 #define
 #define
 #define
 #define
 define
 define
 define
 #define
 define
 ፝
```

```
) /* control the disk's motor */
1) /* explicit seek (for testing) */
2) /* format disk */
3) /* notify when disk changes */
4) /* number of disk changes */
5) /* is there a disk in the drive? */
5) /* is the disk write protected? */
 These commands
 4-- TD_NAME is a generic macro to get the name of the driver. This *-- way if the name is ever changed you will pick up the change
 /* for internal use only! */
 * extended IO has a larger than normal to request block.
 The disk driver has an "extended command" facility. take a superset of the normal 10 Request block.
 (OPD_READ | TOE_EXTOON)
(TD_MOTOR | TOE_EXTOON)
(TD_FORWAR | TOE_EXTOON)
(TD_FORWAR | TOE_EXTOON)
(OPD_UPDATE | TOE_EXTOON)
(OPD_CLEAR | TOE_EXTOON)
 (CHO_WRITE | TDF_EXTOOM)
 (OD_NONSTD+0)
(OD_NONSTD+1)
(OD_NONSTD+2)
(OD_NONSTD+3)
(OD_NONSTD+4)
(OD_NONSTD+4)
devices/trackdisk.h Page 2
 (CHE) MONSTED+6)
 TD_NAME "trackdisk.device"
 char internalName[] = ID_NAME;
 TO LASTCOM TO PROTSTATUS
 Driver Specific Commands
 *-- Normal usage would be:
 TDE_EXTROM (1<<15)
 TD_CHANCESTATE
 TO PROTSTATUS
 ULONG lotd_Count;
ULONG lotd_SecLabel;
 TD_CHANCENUM
 ETD_FORMATE
ETD_UPDATE
ETD_CLEAR
 *-- automatically.
 ETD_READ
ETD_MOTOR
ETD_SEEK
 TD_FORMAT
 TD REMOVE
 ETD WRITE
 TO JADIOR
 TO SEEK
8 16:37 1985
 define
 define
 #define
 define
 define
 define
 Idefine
 define
 #define
 define
 define
 define
 define
 define
 define
 #define
```

define define define define define tdefine define define define define #define #define define #define #define #define 03 104 105 106 801 Dec General Error: roughly indicates what the error was
 Specific Error: indicates more detail HOFING EXEC\_ALERIS H Commodore-Amiga, Inc. -- ROM Operating System Executive Include File SubSystem Specific Error /\* in ExecBase.SysFlag \*/ #Header: alerts.h,v 1.0 85/08/28 15:05:44 carl Exp Indicates ROM subsystem number. \* | Ceneral Error | codes 0x00008002 0x00008003 0x00008004 Format of the alert error number: 0x00020000 0x00030000 0x00008001 0x00010000 0x00040000 0x00050000 0x00000x0 0x80000000 0x00000000 exec/alerts.h Page 1 DeadEnd alert #define SF\_ALERIWACK (1<<1) Ceneral Dead-End Alerts general purpose alert objects: #define AO\_GraphicsLib #define AO\_LayersLib #define AO\_Intuition /\*----- alert types #define AL\_DeadEnd Lifndef EXEC\_ALERIS\_H define AT\_Recovery define AC\_NoMemory AC\_OpenRes AC\_IOError AC\_OpenLib #define AO\_ExecLib SubSysId: AC MakeLib AC\_OpenDev SubSysId Source Control: \$Locker: ੂ 8 16:37 1985 #define Idefine define tdefine define 

```
*
 copper display list, no memory */
copper instruction list, no memory
 copper intermediate list overload
 no memory for interrupt servers *
InitStruct() of an APIR source */
 68000 exception vector checksum
 /* unknown gadet type */
/* Recovery form of AN_GadgetType
/* create port, no memory */
/* item plane alloc, no memory */
 copper list head, no memory */
 item plane alloc, no memory */
 no memory for ImpRas */
 no memory to make library */
corrupted memory list */
 library checksum failure */
 short frame, no memory */
 long frame, no memory */
 flood fill, no memory */
 copper list overload */
 BltBitMap, no memory */
 execbase checksum */
 0x84000001
0x04000001
0x84010002
0x04010003
 0x00008011
0x00008012
0x00008013
0x00008014
0x00008015
 0x81000005
0x81000006
0x81000007
 0x00008021
0x00008022
0x00008030
 0x82000003
 0x82000004
 0x82010005
 0x82010006
 0x82010008
 0x02010009
 0x8201000A
 0x03000000
 0x000000x0
 0x00000000
 0x00008010
 0x01000000
 0x81000001
 0x81000002
 0x81000003
 0x81000004
 0×02000000
 0x82010001
 0x82010002
 0x82010007
 0×04000000
 0×0000000
 0×00008031
exec/alerts.h Page
 intuition.library */
 Specific Dead-End Alerts:
 /*----- graphics.library */
#define AN_GraphicsLib 0x02
 exec.library */
 layers.library
 AN_CopIListOver
 AO_KeyboardDev
AO_TrackDiskDev
 AN_CopListHead
 AN_CopListOver
 AO_GamePortDev
 AN_CadgetType
AN_BadCadget
 AN_CreateFort
AN_ItemAlloc
 AN_CopDisplay
 AN ShortErame
 AN_TextImpRas
 AN BaseChlSum
 define AN_MemCorrupt
 define AN_Intuition
 AO_ConsoleDev
 AN Longerame
 AN BItBitMap
 #define AN_LayersLib
 AN_ExceptVect
 AN_L1bChkSum
 AN_FloodF111
 AO_BootStrap
 AN_InitAPtr
 AO_CLISTLID
AO_DOSLID
 AO Workbench
 AN_CopInstr
 AO TimerDev
 AO DiskRsrc
 AO MiscRsrc
 AD_AudioDev
 AO_CIARSrc
 define AN Executb
 define AN_IntrMem
 AO_IconLib
 AO MathLib
 define AN LibMem
 AO RAME 1b
 8 16:37 1985
 #define /
 define
 tdefine
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 #define
```

```
open screen, raster alloc, no memory */
open sys screen, unknown type */
add SW gadgets, no memory */
 Bad State Return entering Intuition */
 *
 Weird echo causing incomprehension couldn't open the Console Device
 Bad Message received by IDCMP */
 Unexpected packet received */
 Disk block sequence error */
 plane alloc, no memory */
item box top < RelZero */
 open screen, no memory */
 open window, no memory */
 sub alloc, no memory */
 error */
 no memory at startup */
 Bitmap corrupt */
Key already free */
 Key out of range */
 Invalid checksum */
 EndTask didn't */
 Freevec failed */
 Opkt fallure */
 /* calibrate: seek
 Disk Error */
 Bad overlay */

 0x84010007
0x84010008
 0x8400000C
0x8400000D
0x8400000E
0x8400000F
 0x8401000A
0x8401000B
 0x07000003
0x07000004
 0x07000066
0x07000007
 0×04010004
 0x84010005
 0x84000006
 0x84000009
 0x05000000
 0x07000005
 0x06000000
 0x07000002
 0x07000008
 #define AN_TrackDiskDev 0x14000000 #define AN_TDCalibSeek 0x14000001
 0x07000000
 0x0700000
 ramlib.library */
 audio. device */
0x10000000
 0×07010001
 0×0700000A
 0x0700000B
 0x0700000C
 0×0900000×0
 /*---- gamaport.device */
#define AN_CamePortDev 0x12000000
 0×11000000
 #define AN_KeyboardDev 0x13000000
 exec/alerts.h Page 3
 trackdisk.device */
 keyboard.device */
 #define AN_OpenScreen 0:
#define AN_OpenScrnfast 0:
#define AN_SysScrnfype 0:
#define AN_AddSNGadget 0:
#define AN_OpenWindow 0:
#define AN_BadState 0:
 '*---- ramlib.library */
 console.device */
 /*----- clist.library.*/
Mdefine AN_CListLib 0
 /*----- math.library */
#define AN_MathLib (
 AN_BadMessage
AN_WeirdEcho
 AN_PlaneAlloc
AN_ItemBoxTop
 AN_NoConsole
 #define AN_ConsoleDev
 dos.library
 AN_DiskBlkSeq
 #define AN_BadOverlay
 AN_KeyFree
AN_BadChkSum
 AN_SubAlloc
 AN StartMem
 AN_DiskError
 AN_QPktFa11
 AN AsyncPkt
 #define AN_AudioDev
 AN_KeyRange
 AN_EndTask
 AN_FreeVec
 Heftne AN_IconLib
 AN_BitMap
 define AN_DOSLib
 Heftne AN_RAMLib
8 16:37 1985
 *define
 define
 define
 #define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 #define
 145
147
149
150
 158
159
 151
152
153
154
155
155
 157
 160
 163
164
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167
167
 161
162
28
```

```
/* boot code returned an error */
 0x14000002 /* delay: error on timer wait */
 get unit: already has disk */
 /* get unit: already has disk *
/* interrupt: no active unit */
 0x15000001 /* bad request */
 0x21000000
0x21000001
0x21000002
 0x30000000
0x30000001
 0×20000000
 0x15000000
 0×22000000
 0×31000000
8 16:37 1985 exec/alerts.h Page
 disk.resource
 misc.resource
 cia.resource
 timer.device
 #define AN_DRIntNoAct
 /*----- bootstrap */
#define AN_BootStrap
#define AN_BootError
 #endif !EXEC_ALERIS_H
 Worldbench */
 #define AN_DiskRsrc
#define AN_DRHasDisk
 define AN_Workbench
 define AN_TimerDev
 Mefine AN_MiscRarc
 AN_IMBadReq
 #define AN_TDDelay
 #define AN_CIARsrc
 #define
 191
192
193
 8
```

```
Duc 8 16:37 1965 execo/axecname.h Page 1

1 /* Commodorus-baldys. Inc. */
2 $464fire EXCONNEE "execo.library"
```

```
interrupt disable nesting count */
task disable nesting count */
 /esesse System Lists desertations of the section of
 /eseese Other Globals deseeseeseeseeseeseeseeseeseeseesee
 /* (will remain set for 68020 as well) */
 /* special attention flags */
/* rescheduling attention */
/* resident module array pointer */
 pointer to current task */
idle counter */
 current quantum ticks */
 time slice quantum */
 misc system flags */
 dispatch counter */
 ExecBase)
 #define SYSBASESIZE sizeof(struct
 /***** AttmFlags *****/
/* Processors and Co-processors: */
#define AFB_68010 0 /* (will remain
 PAL/NTSC
Clock Rate
 SoftIntList SoftInts[5];
exec/execbase.h Page 2
 ResourceList;
 LONG ExecBaseReserved[8];
 DeviceList;
 List PortList;
List TaskReady;
List TaskWait;
 Task *ThisTask;
 IntrList;
 Mentist;
 LibList;
 TaskExceptCode;
TaskExitCode;
 APTR TaskExitCode;
ULONG TaskSigAlloc;
UMORD TaskTrapAlloc;
 LONG LastAlert[4];
 TaskTrapCode;
 UMORD AttnFlags;
UMORD AttnResched;
 ResModules;
 AFB_68020
AFB_68881
AFB_PAL
AFB_50HZ
 UWORD SysFlags;
BYTE IDNestCnt;
BYTE IDNestCnt;
 ULONG DispCount;
 List
List |
List |
List |
 ULONG IdleCount
 List
 List
List
 UMORD Quantum;
 UNORD Elapsed;
 struct
struct
struct
struct
 struct
 struct
 struct
 Dec 8 16:37 1985
 define
 APTR
APTR
 APTR
 ä
```

```
/* error or warning num */
/* actual number of bytes transferred
/* requested number bytes transferred*
/* points to data area */
/* offset for block structured devices
 * Commodore-Amiga, Inc. -- ROM Operating System Executive Include File
 /* device node pointer */
/* unit (driver private)*/
/* device command */
 /* error or warning num */
 /* device node pointer */
/* unit (driver private)*/
/* device command */
 $Header: io.h,v 1.0 85/08/28 15:10:30 carl Exp $
 Message to_Message;
Device *to_Device;
Unit *to_Unit;
exec/10.h Page 1
 lo_Length;
lo_Data;
lo_Offset;
lo_Reserved1;
lo_Reserved2;
 to_Command;
to_Flags;
to_Error;
 #include "exec/ports.h"
#endif !EXEC_PORTS_H
 #define IOB_QUICK 0
#define IOF_QUICK (1<<0)
 to_Command;
 lo_Actual;
 lo_Flags;
 lo Error;
 CHO_INVALID
CHO_RESET
CHO_READ
CHO_MRITE
CHO_UPDATE
 Source Control:
 struct 10StdReq {
 $Locker: $
 struct
UMORD
UBYTE
BYTE
 struct
struct
UMORD
UBYTE
 struct
8 16:37 1985
 BYTE
ULONG
ULONG
APTR
ULONG
ULONG
 #define
 Idefine
 define
 tdefine
 #define
 ።
 7:
 8
```

```
!!fndef EXEC_INTERRUPTS H
Hofine EXEC_INTERRUPTS H
 * Commodore-Amiga, Inc. -- ROM Operating System Executive Include File
 #Header: interrupts.h,v 1.0 85/08/28 15:09:53 carl Exp
 /* For EXEC use ONLY! */
 /* For EXEC use ONLY! */
 server data segment
server code entry
8 16:37 1985 exec/interrupts.h Page 1
 < <
 (*iv_Code)();
Node *iv_Node;
 #define SIH_PRIMASK (0xf0)
 struct Interrupt {
 struct Node is_Node;
 APTR is_Data;
 VOID (*is_Code)();
 (*is_code) ();
 struct List sh_List;
UMORD sh_Pad;
 #Include "exec/nodes.h" #endif !EXEC_NODES_H
 #include "exec/lists.h"
#endif !EXEC_LISTS_H
 #1 fndef EXEC_LISTS_H
 #1fndef EXEC NODES H
 struct IntVector {
 APIR iv_Data;
 Source Control:
 struct SoftIntList {
 $Locker: $
 APIR
VOID
struct
 #ifudef
 #end1f
 ä
 بخ
 34384
```

```
* Commodore-Amiga, Inc. -- ROM Operating System Executive Include File
 /* we are currently checksumming */
/* we have just changed the lib */
/* set if we should bother to sum */
/* delayed expunge */
 number of bytes before library */
number of bytes after library */
 (-LIB_VECTSIZE)
[LIB_BASE - (LIB_RESERVED*LIB_VECTSIZE))
[LIB_USERDEF)
 /* the checksum itself */
/* number of current opens */
 $Header: libraries.h,v 1.0 85/08/28 15:10:56 carl Exp
 the checksum itself */
exec/libraries.h Page 1
 < <
 11b MegSize
 -12)
-18)
-24)
 tern struct Library {
struct Node lib Node;
UBYIE lib_pad;
UMCRD lib_NegSize;
UMCRD lib_NegSize;
UMCRD lib_Nersion;
UMCRD lib_Revision;
APIR lib_I&ftring;
ULONG lib_Sum;
 #define LIBE_SUMMING (1<<0)
#define LIBE_CHANGED (1<<1)
#define LIBE_SUMUSED (1<<2)
#define LIBE_DELEXP (1<<2)
 EXEC_LIBRARIES_H
EXEC_LIBRARIES_H
 #include "exec/nodes.h"
#endif !EXEC_NODES_H
 #define LIB_VECTSIZE
#define LIB_RESERVED
#define LIB_RSE
#define LIB_USERDEF
#define LIB_NONSTD
 extern struct Library
 #1fndef EXEC_NODES_H
 Source Control:
 #define LIB_CLOSE #define LIB_EXPUNCE
 #define LIB_EXTFUNC
 #define LIB_OPEN
 $Locker: $
8 16:37 1985
 #ifndef
#define
 ᇔ
 Dec
```

```
* Commodore-Amiga, Inc. -- RCM Operating System Executive Include File
 $Header: lists.h,v 1.0 85/08/28 15:11:23 carl Exp $
8 16:37 1985 exec/lists.h Page 1
 #1fndef EXEC_NODES_H
#include "exec/nodes.h"
#endif !EXEC_NODES_H
 Source Control:
 $Locker: $
 struct List {
 struct N
 struct N
 struct N
 struct N
 uBYTE 11
 #end1f
 Dec
```

```
Possize lib Possize
Version lib Version
Revision lib Revision
IdString lib_IdString
8 16:37 1985 exec/libraries.h Page 2
 define lh PosSize
 Mefine 1h_OpenCnt
 Hefine In IdSom
 #end1f
```

```
/* number of entries in this struct */
/* the first entry */
 /#---
 /* compatability */
 /*---- Memory Requirement Types -----
 struct MemList {
 struct Node ml_Node;
 UWCRD ml_NumEntries;
 struct MemEntry ml_ME[1];
Dec 8 16:37 1985 exec/memory.h Page 2
 #define MEME_CALEAR (1<<16) #define MEME_LARGEST (1<<17)
 (1<<1)
 8 7
 #define MEM_BLOCKSIZE #define MEM_BLOCKMASK
 define MEMF_PUBLIC
 #define mlme mlME
 #define MEME_CHIP
#define MEME_EAST
 Hend1f
 557
558
660
661
661
671
671
772
773
774
775
774
775
776
80
```

```
/* the AllocKem requirements */
/* the address of this memory region */
 /* the length of this memory region ^{*}/
 /eccest MemCounk the contract

 Commodore-Amiga, Inc. -- ROM Operating System Executive Include File

 /* characteristics of this region */
/* first free region */
/* lower memory bound */
/* upper memory bound*1 */
/* total number of free bytes */
 /* pointer to next chunk */
/* chunk byte size */
 $Header: memory.h,v 1.0 85/08/28 15:11:49 carl Exp
 me_Un /* compatability */
me_Un.mev_Reqs
me_Un.mev_Addr
 MemChunk *mh_First;
8 16:37 1985 exec/memory.h Page 1
 struct MemChunk {
 struct MemChunk *mc_Next;
 mh Attributes;
 Node mb_Node;
 #Include "exec/nodes.h"
#endif !EXEC_NODES_H
 union {
 UIONG meu_Reqs;
 union meu_Addr;
 me Length;
 mh Upper;
mh Free;
 mh Lower;
 mc_Bytes;
 Memilieader (
 #1fndef EXEC_NODES_H
 MemEntry {
 Source Control:
 #define me_un
#define me_Reqs
#define me_Addr
 APTR me) me Un; ULONG me
 $Locker: $
 UMORD
struct
APTR
APTR
ULONG
 struct
 ።
 ä
 118
22
22
23
24
25
25
25
27
27
 200
```

```
-- ROM Operating System Executive Include File
 define EXEC_PORTS_H
 struct Message {
 struct Node mn_Node;
 struct MsgPort *m_ReplyPort; /* message reply port */
 struct MsgPort *m_ReplyPort; /* message len in bytes */
 >>>
 /* signal bit number
/* task to be signalled
/* message linked list
 $Header: ports.h,v 1.1 85/11/12 18:11:45 carl Exp
8 16:37 1985 exec/ports.h Page 1
 mp_SlgBit;
Task *mp_SigTask;
List mp_MsgList;
 #define mp_SoftInt mp_SigTask
 Node mp_Node;
mp_Flags;
 #1fndef EXEC_NODES_H
#Include "exec/nodes.h"
#endif !EXEC_NODES_H
 #ifndef EXEC_TASKS_H
#include "exec/tasks.h"
#endif !EXEC_TASKS_H
 * Commodore-Amiga, Inc.
 #ifndef EXEC_LISTS_H
#include "exec/lists.h"
#endif !EXEC_LISTS_H
 EXEC_PORTS_H
 Source Control:
 #define PA_SIGNAL
#define PA_SOFTINT
#define PA_IGNORE
 define PF_ACTION
 struct MagPort {
 $Locker: $
 struct
struct
 struct
UBYTE
 UBYTE
 #1fndef
 ።
 ä
```

```
idefine EXEC NODES.H
 -- ROM Operating System Executive Include File
 $Header: nodes.h,v 1.1 85/11/12 18:22:53 carl Exp $
8 16:37 1985 exec/nodes.h Page 1
 ode *In Succ;
 Node *In Pred
 Commodore-Amiga, Inc.
 EXEC NODES H
 NT MEMORY
NT SOFTINT
NT FONT
NT PROCESS
NT SEMAPHORE
1
 *In_Name;
 In Pri;
 IT INTERRUPT
 Source Control:
 OT REPLYNISC
 VT RESOURCE
 NT_MSGPORT
 NT FREEMSC
 NT MESSAGE
 WI LIBRARY
 IL DEVICE
 II TASK
 $Locker:
 struct Node
 struct
struct
UBYTE
BYTE
char
 Ifindef
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 #end1f
 4597
 D60
```

```
* Commodore-Amiga, Inc. -- ROM Operating System Executive Include File
 >>
 struct Resident *rt_MatchTag; /* pointer to the above
APTR rt_EndSkip; /* address to continue scan *
UBYTE rt_Flags; /* various tag flags
UBYTE rt_Version; /* release version number */
UBYTE rt_Type; /* thitialization priority */
char *rt_Name; /* pointer to node name */
char *rt_IdString; /* pointer to ident string */
APTR rt_Init; /* pointer to init code */
 /* word to match on (ILLECAL)
 $Beader: resident.h,v 1.0 85/08/28 15:13:28 carl Exp
exec/resident.h Page 1
 0x4AEC
 (1447)
 /* Compatibility: */
#define RIM_WHEN
#define RIM_NEVER
#define RIM_COLDSTART 1
 #1fndef EXEC_NODES_H
#include "exec/nodes.h"
#endif !EXEC_NODES_H
 #define RTC_MATCHNORD
 struct Resident {
 UMORD rt_MatchWord;
 #define RTF_COLDSTART #define RTF_COLDSTART
 Source Control:
 $Locker: $
8 16:37 1985
 #end1f
 8
```

```
8 16:37 1985 exec/tasks.h Page 2
 Predefined Signals
 SIGE_CHILD
SIGE_BLIT
SIGE_DOS
 Task States
 TS_READY
TS_WALT
TS_EXCEPT
TS_REMOVED
 IS_INVALID
 IS ADDED
 IS RUN
 tdefine
 define
 define
 define
 define
 define
 define
 #define
 tdefine
 define
 -----/
 end1f
 557
559
660
660
660
660
660
660
671
771
772
773
```

```
/* intr disabled nesting*/
/* task disabled nesting*/
/* sigs we are waiting for */
/* sigs we have received */
/* sigs we will take excepts for */
/* traps allocated */
/* traps enabled */
/* points to except data */
/* points to except code */
/* points to trap code */
/* points to trap data */
/* stack pointer */
/* stack jower bound */
/* stack iower bound */
/* stack iosing CPU */
/* task losing CPU */
/* allocated memory */
/* per task data */
 -- ROM Operating System Executive Include File
 #Header: tasks.h,v 1.0 85/08/28 15:14:19 carl Exp $
8 16:37 1985 exec/tasks.h Page 1
 List to MemEntry;
 tc_SPUpper;
(*tc_Switch) ();
(*tc_Launch) ();
 tc_ExceptData;
tc_ExceptCode;
tc_TrapData;
tc_TrapCode;
 extern struct Task {
 struct Node tc_Node;
 to_IDNestOnt;
to_IDNestOnt;
 tc_TrapAlloc;
 tc_Slogxcept
 tc_TrapAble;
 Commodore-Amiga, Inc.
 c_SigAlloc;
 tc_SigMait;
tc_SigMecvd;
 tc_SPReg;
tc_SPLower;
 tc_UserData;
 #ifndef EXEC_NODES_H
#include "exec/nodes.h"
#endif !EXEC_NODES_H
 #ifndef EXEC_LISTS_H
#include "exec/lists.h"
#endif !EXEC_LISTS_H
 tc_Flags;
 Flag Bits ---
TB_PROCTIME
TB_STACKCHK
TB_EXCEPT
TB_SMITCH
TB_LAUNCH
 c_State;
 Source Control:
 $Locker:
 #define 1
#define 1
#define 1
 #!fndef
 #define
 tdefine
 ^{1}
 80
```

```
•
 /* typedef does not seem to work here */
 /* signed 32-bit quantity */
/* unsigned 32-bit quantity */
/* 32 bits manipulated individually */
/* signed 16-bit quantity */
/* unsigned 16-bit quantity */
/* 16 bits manipulated individually */
/* signed 8-bit quantity */
/* unsigned 8-bit quantity */
/* abits manipulated individually */
/* abits manipulated individually */
/* abits manipulated individually */
/* absolute memory pointer */
 /* the declaratory use of an external
/* reference to an external */
/* a local static variable */
/* a (hopefully) register variable */
 /* For compatability only: (don't use in new code) */
typedef short SHRET; /* signed 16-bit quantity (WORD) */
typedef unsigned short USHRET; /* unsigned 16-bit quantity (UMORD)
 Commodore-Amiga, Inc. -- ROM Operating System Executive Include File
 #Header: types.h,v 1.2 85/11/15 17:43:37 carl Exp
 semantics */
FLOAT;
DOUBLE;
COUNT;
UCCUNT;
BOCL;
TEXT;
 UMORD;
MORDBITS;
 UBYTE;
BYTEBITS;
*STRPTR;
*APTR;
 ONCBITS;
8 16:37 1985 exec/types.h Page 1
 BYTE;
 31
 define REGISTER register
 /* Types with specific stypedeff lost typedeff lost typedeff double typedeff short typedeff unsigned short typedeff short
 LIBRARY_VERSION
 Vold
 unsigned short unsigned short
 0×FF
 unsigned char
unsigned char
STRPTR
 Idefine IMPORT extern
Idefine STATIC static
 EXEC_TYPES_H
 unsigned long
 unsigned long
 define GLOBAL extern
 unsigned char
 typedef unsigned char
 Source Control:
 Idefine BYTEMASK
 $Locker: $
 short
 #define FALSE
#define NULL
 define VOID
 char
 define TRUE
 ypedef long
 11 fndef
 typedef
 cypedef
 typedef
 typedef
 typedef
 #define
 ypadef
 cypedef
 ypedef
 typedef
 ypedef
 80
```

Dec 8 16:37 1985 exec/types.h Page 2 #end1f 28 22

```
/* roms used to find next ClipRect */
/* ignored by roms, used by windowlib */
/* ignored by roms, used by windowlib */
 set up by windowlib, used by roms | */
 /* only exists in layer allocation
 /* set up by windowlill
/* system reserved */
/* system use */
 /* defines for code values for getcode */
#define ISLESSX 1
#define ISLESSY 2
#define ISCRTRX 4
#define ISCRTRY 8
 /* internal cliprect flags */
#define CR_NEEDS_NO_CONCEALED_RASTERS
8 16:37 1985 graphics/clip.h Page
 BitMap *BitMap;
Rectangle bounds;
ClipRect *_p1, *_p2;
 ClipRect *Next;
 ClipRect *prev;
 *lobs;
 LONG reserved;
#ifdef NEWCLIPRECTS_1_1
 struct ClipRect
 struct
 struct
 struct
 struct
 struct
 struct
 #end1f
 280
```

```
/* ignored by roms */
/* read by roms to find first cliprect */
/* ignored by roms, I hope */
/* ignored by roms, */
/* ignored by roms */
/* roms, obey locking/unlocking
convention */
 lock counter used by layer software */
 /* else damage cliprect list for refresh */
/* reserved for user interface use */
 ClipRect *_cliprects; /* system use during refresh */
Layer_Info *LayerInfo; /* points to head of the list */
Task *LayerLocker; /* points to task that has layerlock */
ClipRect *SuperSaveClipRects; /* preallocated cr's */
ClipRect *cr,*cr2,*crnew; /* used by dedice */
LipRect *cr,*cr2,*crnew; /* system use, reserved */
 /* roms can nest their own locks and
still work */
 /* Cllp.h
 * 02-04-85 Dale created file from graph.h
 /* obscured ?, Virtual BitMap? */
 /* list of rectangles to refresh
 ClipRect *SuperClipRect; /* super bitmap cliprects if
VBltMap != 0*/
 /* structures used by and constructed by windowlib.a */
/* understood by rom software */
 through */
 Commodore-Amiga, Inc
 Comments
 MsgPort LockPort;
Message LockMessage;
MsgPort ReplyPort;
Message LockMessage;
 *ClipRect;
8 16:37 1985 graphics/clip.h Page 1
 *DamageList;
 'rp;
bounds;
 Flags;
BitMap *SuperBitMap;
 Layer * front, *back;
 Scroll_X, Scroll_Y;
 Layer LockCount;
 finclude <graphics/gfx.h>
 Modification History
 author :
 #1fndef CRAPHICS_CLIP_H
#define CRAPHICS_CLIP_H
 finclude <exec/ports.b>
 #1fndef GRAPHICS_GEX_H
 reserved1;
 Rectangle
 LockCount;
 reserved;
 Hifndef EXEC_PORTS H
 ClipRect
 lastPort
 Region
 ľock;
 Į,
 struct Layer
 UMORD
struct
struct
 struct
 struct
 struct
 struct
 struct
 struct
 struct
 struct
 struct
struct
struct
APTR
 struct
 APTR
SHORT
 UBYTE
 struct
 struct
 UBXII
 UBYTE
 date
 Hendif
 #end1f
 2
```

```
structure of cprlist that points to list that hardware actually execut
 pseude opcode for move #XXXX,dir */
pseudo opcode for wait y.x */
continue processing with next buffer */
copper instruction only for short frames
 ,,,,,,,,,
 copper instruction only for long frames
 destination address of copper move */
 horizontal beam wait position */
destination immediate data to send */
 /* start of copper list */
/* number of long instructions */
 /* vertical beam wait */
/* destination address o
 added this header file
 redefined with unions
 Opcode; /* 0 = move, 1 = wait */
 Modification History
 u3.u4.u1.WaltPos
u3.u4.u1.DestAddr
u3.u4.u2.HWaltPos
u3.u4.u2.DestData
 Commodore-Amiga, Inc.
8 16:37 1985 graphics/copper.h Page
 ::
 :::::
 u3.nxtlist
 struct CopList *nxtlist;
 0×4000
 0x8000
 /* evode
 #1 fndef CRAPHICS_COPPER_H
 cprlist *Next;
 author:
 Dale
 Dale
 HWaitPos;
DestData;
 VMa1tPos:
 #define COPPER_WAIT
 start;
 Idefine COPPER_MOVE
 DestAddr
 #define CPR_NT_LOF
#define CPR_NT_SHT
 #define DESTADDR
#define HWAITPOS
#define DESTDATA
 define CPRNXTBUE
 shorthand for
 define WAITPOS
 Edetine NXTLIST
 struct cprlist
 struct Copins
 9-11-84
2-09-85
 8-24-84
 struct
 short
 unton
 struct
 UMORD
 SHORT
 date
 SHORT
 ₩
₩
₩
 SHORT
 SHORT
 unton
 mion
 } u2;
 j
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 9
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```

```
,,,,,,,
 boundry-hit, and the second argument has the appropriate bit(s)
 When the user's boundry-hit routine is called (via the argument
 These bit descriptors are used by the GEL boundry hit routines.
 set by a call to SetCollision) the first argument passed to
the user's routine is the address of the GEL involved in the
 a CEL to describe whether or not these types of collisions can affect the CEL. BURKY_HIT is described further below;
 this bit is permanently assigned as the boundary-hit flag. The other bit GEL HII is meant only as a default to cover
 These bit descriptors are used by the GEL collide routines
 any CEL hitting any other; the user may redefine this bit
 These bits are set in the hitMask and meMask variables of
 include file for collision detection and control */
 added this beader file
 set to describe which boundry was surpassed
 Modification History
 Commodore-Amiga, Inc.
 Comments

graphics/collide.h Page
 #1 fndef CRAPHICS_COLLIDE_H
 #define GRAPHICS_COLLIDE_H
 author :
 Dale
 define BORDERHIT 0
 BOTTOMHIT 2
 LEFTHIT
RICHTHIT
 TOPHIT
 8-24-84
 8 16:37 1985
 date
 Idefine
 define
 define
 define
 end1f
 •
 8
```

```
/* how many bit planes? */
/* 0 = none, 1->6 = 1->6, 7 = re
/* bits to shift for bplcon0 */
/* bplcon2 bit */
/* disable color burst */
 /* interlace mode for 400 */
 /* horizontal start/stop */
/* vertical start/stop */
 /* include define file for display control registers */
 /* display window start and stop defines */
#define DIW_HORIZ_POS 0x7F /* horizz
#define DIW_WRTCL_POS 0x1FF /* verti
#define DIW_WRTCL_POS_SHIFT 7
graphics/display.h Page 1
 었
 #define PFA_FINE_SCROIL 0x/#define PFB_FINE_SCROIL_SHIFT 4
 0×8000
 #define PF_FINE_SCROLL_MASK
 0×0200
 0×8000
 0×400
 0x800
 0×40
 0x7
 /* bplcon0 defines */
 /* bplcon1 defines */
 #define HOLDNWODIFY #define INTERLACE
 Holefine PLNCNISHET
 #define MODE_640
#define PLNCNTMSK
 /* vposr bits */
#define VPOSRLOF
 Idefine PF2PRI
Idefine COLORON
 Idefine DBLPF
8 16:37 1985
 <u>8</u>
```

```
ViewPort *_ViewPort; /* system use */
Copins *Copins; /* start of this block */
Copins *CopPtr; /* intermediate ptr */
CopStart; / mrgcop fills this in for Long Frame*/
CopStart; / mrgcop fills this in for Short Frame*/
Count; / max * of copins for this block */
MaxCount; /* max * of copins for this block */
DyOffset; /* offset this copper list vertical waits */
 #FirstCopList; /* head node of this copper list */
CopList; / node in use */
 /* next block for this copper list */
 UNCRD diagstrt[4]; /* copper list for first bitplane */
UNCRD sprstrtup[(2*8*2)+2+(2*2)+2];
UNCRD sprstop[2];
 /* system use */
8 16:37 1985 graphics/copper.h Page 2
 Coplist *_Coplist; // ViewPort;
 *CopList;
 CopList *Next;
 struct UCopList *Next;
struct CopList *First
struct CopList *CopList
 struct UCopList
 struct copinit
 struct Coplist
 Struct
UMORD
UMORD
SHORT
SHORT
SHORT
 struct
 struct
 struct
 struct
 #end1f
 ä
 ä
 8
```

| 1 #1fnd<br>2 #defi       | #1fndef CRAPHICS_CRIS_H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ·                                                                                                                                               | 55.                                                                                    | */<br>#1fndef VUserStuff                                        | /* VSprite user stuff */                                                                         | stuff */                                           |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------|
|                          | **************************************                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                 | 4                                                                                      | #define VUserStuir Shaki<br>#endif                              | T NACE                                                                                           |                                                    |
| * *                      | include file for AMIGA GELS (Graphics Elements)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | phics Elements)                                                                                                                                 | 62 6                                                                                   | #1fndef BüserStuff                                              | /* Bob user stuff                                                                                | /• 3                                               |
| - <b>.</b>               | Commodore-Amiga, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | nc.                                                                                                                                             | 2.4                                                                                    | #endif                                                          |                                                                                                  |                                                    |
| • • • •                  | Mod                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | gtory                                                                                                                                           |                                                                                        | #1fndef AUserStuff<br>#define AUserStuff SHORT                  | /* AnimOb user stuff */<br>CRI                                                                   | tuff */                                            |
|                          | 9-28-84 -=RJ=- for CELS1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | added this header file<br>for CELSIG added Bob.h to this file                                                                                   | 89<br>69<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20 | #end1f                                                          |                                                                                                  |                                                    |
|                          | made na                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | * made name and declaration changes                                                                                                             |                                                                                        | ***************************************                         | /                                                                                                |                                                    |
| 17<br>18<br>19           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                 |                                                                                        | struct VSprite                                                  |                                                                                                  |                                                    |
| <b>:</b> :               | VSprite flags.*/                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                 | 7 8                                                                                    | *                                                               | SYSTEM VARIABLES                                                                                 | / # Online 2 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - |
| .‡:                      | SUSERFLACS 0x00FF /*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | sk of all user-settable VSprite-flags   */                                                                                                      |                                                                                        | /* CEL linked list fo                                           | CEL linked list forward/backward pointers sorted by Y.X Value '/<br>struct VSorite "NextVSprite; | orted by y,x value -/                              |
| 23 #define<br>24 #define | SAVEBACK 0x0002 /*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | if background is to be saved/restored                                                                                                           |                                                                                        | struct VSprite                                                  | *PrevVSprite;                                                                                    |                                                    |
| ₩ 1                      | OVERLAY 0x0004 /*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | to mask image of bob onto background<br>if VSorite absolutely must be drawn                                                                     |                                                                                        | /* CEL draw list cons                                           | CEL draw list constructed in the order the Bobs are actually drawn,                              | Bobs are actually drawn,                           |
| ! .                      | prite flags: */                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | this Boh's harkmound has been saved #/                                                                                                          | <br>                                                                                   | * list is copied to clear list<br>* must be here in VSprite for | o clear list<br>Aprite for system boundary detection                                             | y detection                                        |
| **                       | BOBUPDATE 0x0200 /*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | temporary flag, useless to outside world                                                                                                        | -                                                                                      | */<br>struct VSorite                                            | *DrawPath: /* pointer                                                                            | /* pointer of overlay drawing */                   |
|                          | VSCVERFICH 0x0800 /*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Set if get is completely cripped (crise ed.)<br>VSprite overflow (if MUSIDRAW set we draw!)                                                     | <u>`</u>                                                                               | struct VSprite                                                  | • •                                                                                              | /* pointer for overlay clearing */                 |
| •                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                 | 8 6 6                                                                                  | /* the VSprite positi                                           | the VSprite positions are defined in (y,x) ord                                                   | order to make sorting                              |
| 34 / th                  | * these are the user flag bits */                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | s */<br>/* mask of all user-settable Bob-flacs */                                                                                               |                                                                                        | * Sortang easter, a                                             |                                                                                                  |                                                    |
| * **                     | SAVEBOB 0x0001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | t to not erase Bob */                                                                                                                           | . 65                                                                                   | WORD OLDY, OLDX;                                                | <pre>/* previous position */</pre>                                                               | ltion */                                           |
| ₩.                       | ox0002                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | t to identify Bob as AnimComp */                                                                                                                |                                                                                        | */                                                              | COMPON VARIABLES                                                                                 |                                                    |
| . 3                      | " these are the system ilag bits "/ whethe BWAITING $0 	imes 0 	imes $ | t while Bob is waiting on 'after' */                                                                                                            | . 98                                                                                   | WORD Flags;                                                     | /* VSprite flags                                                                                 | /# 5                                               |
| -                        | BDRAWN 0x0200 /*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                 | 2 %                                                                                    |                                                                 |                                                                                                  |                                                    |
| 41 #define               | ING BOBSAWAY 0x0400 /" set                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | to initiate removat of                                                                                                                          |                                                                                        | •                                                               | USER VARIABLES                                                                                   |                                                    |
| ~                        | SAVEPRESERVE 0x1000 /*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | back-restore during double-buffer                                                                                                               | 66                                                                                     |                                                                 | the VSprite positions are defined in $(y,x)$                                                     | (y,x) order to make sorting a interest             |
| 44 #define               | INS OUTSTEP 0x2000 /* for                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                 | 100                                                                                    | * sorting easier, :                                             | sorting easier, since (Y,x) as a long income                                                     | j                                                  |
|                          | /* defines for the animation procedures */                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | hres */                                                                                                                                         | 102                                                                                    |                                                                 | /* screen position */                                                                            | lon */                                             |
| `#                       | 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                 | 103                                                                                    | The Lot of the                                                  |                                                                                                  |                                                    |
| 48 #def1                 | #define ANIMIALE 0x0020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                 | 105                                                                                    |                                                                 | numbar                                                                                           | of words per row of image data                     |
| •                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                 | 106                                                                                    | WORD Depth;                                                     | /* number of plan                                                                                | of planes of data '/                               |
| •                        | /* UserStuff definitions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                 | 108                                                                                    |                                                                 | /* which types c                                                                                 | which types can collide with this VSprit           |
| •                        | the user can define these to be                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | can define these to be a single variable or a sub-structure                                                                                     | 100                                                                                    | WORD HITMBEK;                                                   | · malls manne                                                                                    |                                                    |
| 4 4 4                    | if undefined by the user, the see the manual for a therough d                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | if undefined by the user, the system turns these into innocuous Variables see the manual for a therough definition of the UserStuff definitions |                                                                                        | WORD *ImageData;                                                | /* pointer to VSprite image */                                                                   | Sprite image */                                    |
|                          | and the mental to the second property                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                 | 113                                                                                    |                                                                 |                                                                                                  |                                                    |

| - D-3 | Dac 8 1115 1115 1120 1120 1120 1120 1120 1120 | 8 16:37 1985 graphics/gels.h Page 3  8 16:37 1985 graphics/gels.h Page 3  4 the VSprite bits, used for fast collision detection of edge  5 */ WORD *BorderLine; /* logical OR of all VSprite bits */ WORD *CollMask; /* similar to above except this is a matrix */ WORD *SprColors;  9 /* pointer to this VSprite's color definitions (not used by Bobs) */ WORD *SprColors;  11 struct Bob *VSBob; /* points home if this VSprite is part of a Bob */ WORD *SprColors;  12 struct Bob *VSBob; /* points home if this VSprite is part of a Bob */ A planePick flag: set bit selects a plane from image, clear bit selects  13 ** to boff flag: if using shadow mask to fill plane, this bit (corresponding 14 ** to bit in planePick) describes whether to fill with 0's or 1's 15 to be drawn into memory 16 ** There are two uses for these flags: 17 ** - if this is the VSprite of a Bob, these flags must be set too to describe 18 ** WHISTIRRAW flag of the VSprite, these flags must be set too to describe 19 ** which color registers the user wants for the image | ed f | Dec 8 1 170 171 172 173 174 175 177 177 177 177 177 177 177 177 177 | MOST 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1                                                                                        | AnimComp  AnimComp  The second of the second |
|-------|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 35 –  | 137<br>138<br>140<br>141<br>142<br>145        | BYTE PlaneConff;  WherStuff WherExt; /* user definable: see note above */  Struct Bob  * blitter-objects */                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | *    | 192                                                                 | /* pointer to compone<br>struct AnimComp<br>struct AnimComp<br>WORD (*AnimCRouti<br>WORD YTrans;<br>WORD XTrans;<br>struct AnimOb | ointer to component component defin<br>struct AnimComp *NextSeq;<br>struct AnimCRoutine)(); /* address<br>WORD YTrans; /* initial y trans<br>WORD XTrans; /* initial x trans<br>struct AnimOb *HeadOb;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|       | 147<br>148<br>150<br>151<br>153<br>153<br>154 | /* WORD Flags; /* general purpose flags (see definitions below) */ /* USER VARIABLES  WORD *SaveBuffer; /* pointer to the buffer for background save */ /* used by Bobs for "cookie-cutting" and multi-plane masking */ WORD *ImageShadow;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | > >  | •                                                                   | struci<br>ruct Ani<br>struci                                                                                                      | *AnimBob; SYSTEM VARIABL: *NextOb, *PrevOb;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|       | 155<br>156<br>157<br>158<br>160<br>161        | /* pointer to BOBs for sequenced drawing of Bobs  * for correct overlaying of multiple component animations  */ struct Bob *Before: /* draw this Bob before Bob pointed to by before struct Bob *After: /* draw this Bob after Bob pointed to by after */ struct Bob *After: /* draw this Bob after Bob pointed to by after */ struct VSprite *BobVSprite: /* this Bob's VSprite definition */                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |      | •                                                                   | /* number of calls to An LONG Clock; WORD AnoldY, AnoldX;  **MORD Any, AnX;                                                       | of calls to Animate this Animalock;  unoldy, Anoldx;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|       | 163<br>164<br>165<br>166<br>167<br>168        | <pre>struct AnimComp *BobComp; /* pointer to this Bob's AnimComp de? */ struct DBufPacket *DBuffer; /* pointer to this Bob's dBuf packet */ BUserStuff BUserExt; /* Bob user extension */</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      | 219 /<br>220<br>223<br>223<br>223                                   | /* USER VP<br>WCRD YVel;<br>WCRD YAccel, XAccel;<br>WCRD RingYTrans, RingXTrans;                                                  | USER VARIABLES /* v 61; /* a RingXTrans; /* r                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

| 171<br>172<br>173<br>174 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 173<br>174               | struct AnimComp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 174                      | /* SYSTEM VARIABLES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 175<br>25.1              | COMPON VARIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 173                      | NUMU Elags; /* AnimComp flags for system & user                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 178                      | ar defines how long t                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 179                      | o zero the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 181                      | * It set to zero, Animicamp never switches                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 182                      | WORD Timer;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 183                      | ***************************************                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                          | Initial value for timer when the Animcom                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 186                      | WORD TimeSet;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 188                      | /* pointer to next and previous commonents of animation about a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 189                      | AnimComp "NextComp;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 191                      | struct Animicomp "PrevComp;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                          | struct                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 8 :                      | AntimComp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 5<br>5<br>5              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 197                      | wer ("Minnacouting)(); /" address of special animation procedure */                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 198                      | Yrans; /* initial y translation (if this is a component)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 199<br>200               | initial x translation (if this is a component)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 201                      | struct AnimOb *HeadOb;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 202                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                          | struct bob "AnimBob;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                          | struct AnimOb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 200                      | The state of the s |
| 209                      | struct AnimCo *NextCb, *PrevCb;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| -                        | /* number of calls to Animate this AnimOb has endured */                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 212                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 214                      | WORD AnoldY, AnoldX; /* old y,x coordinates */                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| •                        | /*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 217<br>218               | WORD Any, Anx; /* Y.x coordinates of the AnimGb */                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 219                      | USER VARIABLES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 223                      | WORD YAccel; XAccel; /* Accelerations of this object */                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 223                      | WORD RingyTrans, RingXTrans; /* ring translation values */                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

```
/* convert Chip adr to Bread Board
 /* general include file for application programs */
#define BITSET 0x8000
#define BITCLR 0
 ((h)*((w+15)>>3&0xFFFE))
 Commodore-Amiga, Inc
 ((long) (a) >>1)
 ((long) (a))
graphics/gfx.h Page
 :Comments
 Modification History
 typedef UBYTE *PLANEPTR;
 BytesPerRow,
 PLANEPTR Planes [8];
 Minx, Minx;
MaxX, MaxY;
 #define RASSIZE (w.h)
 :author
 Depth;
 Flags;
 struct Rectangle
 define TOBB(a)
 define TOBB(a)
 #define ACNUS
 struct BitMap
 #1fdef ACNUS
 UWORD
UWORD
UBYTE
UWORD
 SHORT
 8 16:37 1985
 SHORT
 date
 #end1f
 Pend1f
 19188
 80
 /* save the other buffers screen coordinates
/* carry the draw path over the gap †/
 functions that are currently simple enough to exist as a It should not be assumed that this will always be the case
 /* dBufPacket defines the values needed to be saved across buffer to buffer
 /* pointer to first component */
 /* address of special animation
procedure */
 /* a structure to contain the 16 collision procedure addresses ^{*}/
 /* AnimOb user extension */
 /* these pointers must be filled in by the user */
/* pointer to other buffer's background save buffer */
WORD *BufBuffer;
 #define InitAnimate(animKey) {*(animKey) = NULL;}
#define RemBob(b) {(b) ->Flags |= BOBSAWAX;}
 Dec 8 16:37 1985 graphics/gels.h Page 5
 struct AnimComp *HeadComp;
 when in double-buffer mode
 *BufPath;
 WORD (*AnimORoutine)();
 int (*collPtrs[16])();
 AUserStuff AUserExt;
 WORD BufY, BufX;
struct VSprite
 #define B2NCRM
#define B2SWAP
#define B2BOBER
 struct DBufPacket
 these are CEL definition.
 struct collTable
 #end1f
 ä
```

```
₩
 /* NTSC PAL CENLOC etc*/
/* Display flags are determined at power
/* for future use */
 copinit; / ptr to copper start up list */
/* for 8520 resource use */
; /* for future blitter resource use */
 /* copy of current first bplcon0 */
 added this header file & TextFonts
 system.bplcon0; /* this is initialized to 0 */
it is ored into each bplcon0 for display */
 interrupt vbsrv, timsrv, bltsrv;
 Modification History
 bltnode *blthd,*blttl;
bltnode *bsblthd,*bsblttl;
 Commodore-Amiga, Inc.
8 16:37 1985 graphics/gfxbase.h Page 1
 Comments
 fextFont *DefaultFont;
 /* candidates for removal */
USHORT Flags;
SHORT BlitLock;
 List BlitWaltQ;
Task *BlitOwner;
List TOF_WaltQ;
 TextFonts;
 *ActiView;
 Library LibNode;
 | Include <exec/interrupts.h>
 include <exec/libraries.h>
 SpriteReserved;
 #1fndef GRAPHICS_GFXBASE_H
#define GRAPHICS_GFXBASE_H
 Afridef EXEC_INTERRUPTS_H
 author :
 sytereserved;
 DisplayFlags;
 reserved[2];
 ifndef EXEC LIBRARIES H
 #ifndef EXEC_LISTS_H
#include <exec/lists.h>
 Kodiak
 *blitter;
*LOFlist;
 Bliffock;
BlifNest;
 BeamSync;
 SHE 11st
 copinit
 /Blank;
 fodes;
 Sebug;
 Viev
 struct GfxBase
 10-20-84
 struct
struct
 long
UMORD
UMORD
struct
struct
struct
Struct
UMORD
BYTE
SHORT
SHORT
 struct
 struct
UMORD
 struct
 struct
 ULONG
 UBYTE
 short
 UBYTE
 date
 long
 Pend1f
 2
```

```
8 16:37 1985 graphics/gfxbase.h Page 2
 #define BLITMSG_FAULT
 #define NTSC
#define GENLOC
 #define PAL
 #end1f
```

```
/* passed to srvr by os */
graphics/graphint.h Page 1
 /* structure used by AddIOFTask */
 struct Isrvstr *Iptr;
 struct Node is_Node;
 #Include <exec/nodes.h>
 #1fndef EXEC_NODES_H
 () (apooo ,)
 Int (*code) ();
 struct Isrvstr
 Card
 8 16:37 1985
 #end1f
 #end1f
 ፝
 100
 8
```

```
,,,,,,,,,,
 {(w) ->AOIDen = c; (w) ->Flags |= AREAOUTLINE;}
{(w) ->LinePtrn = p; (w) ->Flags |= FRST_DOT;}
{(w) ->Mask = m;}
{(w) ->AreaPtrn = p; (w) ->AreaPtSz = n;}
 fixed macros using w-> to use (w)->
 fixed macros to use new RastPort
 custom.dmacon = BITSET|DMAE_BASTER
custom.dmacon = BITCLR|DMAE_SASTER
custom.dmacon = BITSET|DMAE_SPRITE
custom.dmacon = BITCLR|DMAE_SPRITE
 custom.intena = BITSET|INTE_VERTB
custom.intena = BITCLR|INTE_VERTB
 {(w)->Flags &= "AREACUTLINE}
 { UCopperListInit(c,n); }
{ CMcve(c,6a,b); CBump(c); }
{ CMait(c,a,b); CBump(c); }
{ CMAIT(c,10000,255); }
 added this header file
 Modification History
graphics/gfxmacros.h Page 1
 Commodore-Amiga, Inc.
 Comments
 finclude <graphics/rastport.h>
 CRAPHICS RASTPORT H
 author :
 Mdefine SetAfPt(v,p,n)
 #define CINIT(c,n)
#define CMOVE(c,a,b)
#define CMOIT(c,a,b)
 #define SetOPen(w,c)
#define SetDrPt(w,p)
#define SetWrMsk(w,m)
 Dale
 Dale
Dale
 #define ON_DISPLAY
#define OPF_DISPLAY
#define ON_SPRITE
 define OFF_SPRITE
 #define ON_VELANK
#define OFF_VELANK
 #define BNDRYOFF
 8-24-84
9-06-84
9-07-84
8 16:37 1985
 date
 #1fndef
 Jendif
 Pend1f
```

```
UBYTE Flags;

/* flag of which sprites to reserve from veprite system */
UBYTE Flags;

/* system use */
struct VSprite *gelHeed, *gelTail; /* dummy vSprites for list management
/* pointer to array of 8 WORDS for sprite available lines */
/* colorection;
 ptr to current vertex */
ptr to start of vector flag table */
ptrs to areafill flags */
AreaMove/Draw will not allow Count>MaxCoun
first point for this polygon */
 •
 /* addresses of collision routines */
 /* pointer to array of 8 pointers for color-last-assigned to vSprites WORD **lastColor;
 * 02-04-85 Dale created from graph.h
 / think frastport. h this teather and the contest of the contest o
 to start of vector table */
 /* system use only */
 /* ptr to areafill pattern */
 bottommost:
 /* unoptimized for 32bit alignment of pointers */ struct GelsInfo
 /* other misc junk for freelist etc. */
 short leftmost, rightmost, topmost,
APIR firstBlissObj, lastBlissObj;

 Commodore-Amiga, Inc.
 graphics/rastport.h Page
 Comments
 struct collTable *collHandler;

 Layer *Layer;
BitMap *BitMap;
*AreaPtrn;
 #ifndef CRAPHICS_RASTPORT_H
#define CRAPHICS_RASTPORT_H
 MaxCount;
FirstX,FirstY;
 #include <graphics/gfx.h>
 Modification History
 author :
 #1 findef CRAPHICS CEX H
 *VctrIb1:
 FlagIbl
 Flagetr
 VctrPtr
 Count;
 BYTE *RasPtr;
 struct AreaInfo
 struct RastPort
 LONG Size:
 struct ImpRas
8 16:37 1985
 struct
USHORT
 SHORT
 SHORT
BYTE
SHORT
SHORT
 struct
 date
 #end1f
 ä
 ä
```

```
_
 /* used to be a node in here someplace */
 /* bunch of massages sent */
 for rastport locking */
for screen locking */
 system use */
system use */
 struct LayerInfo_extra *LayerInfo_extra;
 #define ALERITAYERSNOWEM 0x83010000
graphics/layers.h Page
 struct MsgPort RP_ReplyPort;
struct MsgPort LockPort;
 LayerInfo_extra_size;
 #define NEWLAYERINFO_CALLED 1
 0x40
0x80
 Layer *top_layer;
Layer *check_lp;
 #1fndef CRAPHICS_LAYERS_H
#define CRAPHICS_LAYERS_H
 wordreserved;
 longreserved;
 Task *Locker
 bytereserved;
 fatten_count
 finclude <exec/ports.h>
 !Include <exec/lists.h>
 #define LAYERSWART
#define LAYERSUPER
#define LAYERBACKURUP
#define LAYERREFRESH
 broadcast;
 Hifndef EXEC_PORTS_H
 Hifndef EXECLISTS H
 Lockhest;
 LAYERSINPLE
 struct Layer_Info
 Flags;
 ğ
 struct
BYTE
UBYTE
 struct
 struct
 struct
 struct
 UMORD
UMORD
ULONG
8 16:37 1985
 UBYTE
 UBYTE
 UBYTE
 UBYTE
 define
 #end1f
 Pend1f
 #end1f
 ä
```

```
/* restructions.h
 struct RegionRectangle "RegionRectangle;
 struct RegionRectangle *Next, *Prev;
struct Rectangle bounds;
 Commodore-Amiga, Inc.
graphics/regions.h Page
 struct Rectangle bounds;
 #1 fndef GRAPHICS_REGIONS_H
#define GRAPHICS_REGIONS_H
 finclude <graphics/gfx.h>
 #1 findef CRAPHICS CFX H
 struct RegionRectangle
 struct Region
8 16:38 1985
 #1fndef
 #end1f
 bendif
 ፝
 8
```

```
/* there is only one style of clipping: raster clipping */
/* this preserves the continuity of jaggles regardless of clip window */
/* When drawing into a RastPort, if the ptr to ClipRect is nil then there
/* is no clipping done, this is dangerous but useful for speed */
 current line drawing pattern preshift *
 areafill outline pen */
drawing mode for fill, lines, and text
2'n words for areafill pattern */
 the algorithmically generated style */
text specific flags */
text height */
 for RastPort flags */
/* draw the first dot of this line ? */
/* use one dot mode for drawing lines */
/* flag set when RastPorts
 /* jam 1 color into raster */
/* jam 2 colors into raster */
/* XCR bits into raster */
/* inverse video for drawing modes */
 foreground pen for this raster */
background pen */
 /* used by areafiller */
/* areafills have no crossovers */
 text spacing (per character) */
 write mask for this raster */
 miscellaneous control bits */
16 bits for textured lines */
current pen position */
 current font address */
 are double-buffered */
 text nominal width */
text baseline */
 /* used to be a node */
 for future use */
 /* only used for bobs */
 graphics/rastport.h Page
 *

 Areainfo *Areainfo;
Gelsinfo *Gelsinfo;
 wordreserved[7];
longreserved[2];
 PenHeight;
TextFont *Font;
 /* these are the flag bits #define FRST_DOT 0x01 #define ONE_DOT 0x02 #define DBUFFER 0x04
 ImpRas *ImpRas;
 #define AREACUTLINE 0x08 #define NCCROSSFILL 0x20
 Ф, С. Ф.У;
minterms[8];
 reserved[8];
 AlgoStyle;
TxFlags;
 TxBaseline:
 TxSpacing;
*RP_User;
 limpatent;
 Flags;
LinePtrn;
 TxHelght;
TxWldth;
 DrawMode;
 PenWidth;
 AreaPtSz
 MolPen;
 drawing modes */
 FgPen;
BgPen;
 define COMPLEMENT
 dummy;
 Idefine INVERSVID
 fask;
 Idefine JAM2
 define JAMI
 struct
UBYTE
 JSHORT
 USHORT
8 16:37 1985
 SHORT
 SHORT
 UMORD
 UMORD
 UMORD
 UBYTE
 SHORT
 UBYTE
 200
 BYTE
 BYTE
 BYTE
 BYTE
 #end1f
 *
 兴
 80
 - D-40
```

```
font removal */
 /*---
 /* size is "designed", not constructed */
 /* character sizes can vary from nominal
 /* designed path is reversed (e.g. left)
 /* normal text (no style bits set) */
/* extended face (wider than normal) */
 /***** TextAttr node, matches text attributes in RastPort ********/
 /* designed for hires non-interlaced */
 *
 /* bold face text (ORed w/ shifted)
 /* font is from diskfont.library */
 /* designed for lores interlaced */
 /* name of the font */
/* height of the font */
/* intrinsic font style */
/* font preferences and flags */
 /* the font has been removed */
 #define FSE_UNDERLINED (1<<0)
 /* italic (slanted 1:2 right)
 /* reply message for
 /* font is in rom */
 Commodore-Amiga, Inc.
 graphics library text structures
graphics/text.h Page 1
 struct Message tf_Message;
 (1<<6)
 (1 < < 2)
 (1<<0)
 (1<<1)
 (1<<7)
 1<<1)
 FSF_EXTENDED (1<<3)
 1<<2)
 (1<<3)
 FPF_WIDEDOT (1<<4)
 EXEC_PORTS_H
"exec/ports.h"
 FPF_PROPORTIONAL
 FPB_PROPORTIONAL
 file.h
 FPB DESIGNED 6
 #define FPF_DISKFONT #define FPB_REVPAIH
 FPB_WIDEDOT
 FSB_EXTENDED
 FPF_TALLDOT
 FPF DESIGNED
 ta_YS1ze;
 Font Styles
 FPB_DISKFONT
 FPB_TALLDOT
 #define FPF_REMOVED
 ta_Style;
 taFlags
 struct TextAttr {
STRPTR ta_Name;
 Font Flags
 FPF_ROMFONT
 define FPF_REVPATH
 FPB_REMOVED
 define FPB_ROMFONT
 FSB_ITALIC
 #define FSE_ITALIC
#define FSB_BOLD
 define FSF_BOLD
 Holefine FS_NORMAI
 struct TextFont
 8 16:38 1985
 #include
 UBYTE
UBYTE
UBYTE
 define
 define
 define
 #1fndef
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 #end1f
 455785
 8
```

```
Dec 8 16:38 1985 graphics/sprite.h Page 1

#inded (GAPHICS_SPRITE_H
2 # #offine GAPHICS_SPRITE_H
3 # # Commodors-halgs, Inc.
4 /* Garacter-halgs, Inc.
5 /* sprite.h
6 /* sprite.h
11 Current Suplesprite
10 struct Suplesprite
11 UARBD Prosecildata;
12 UARBD halgt;
13 UARBD halgt;
14 UARBD x.y; /* current position "/
15 };
17 #endif
```

```
/* used for interlaced and noninterlaced
/* only used during interlace */
/* for complete View positioning */
/* for fsets are +- adjustments to standard #s
/* such as INTERLACE, GENLOC */
 ViewPort *Next;

ColorMap *ColorMap; /* table of colors for this viewport */

if this is nil, MakeVPort assumes default values */

CopList *DepIns; /* user by MakeView() */

CopList *SprIns; /* used by sprite stuff */

CopList *CIrIns; /* used by sprite stuff */

If */

If this is nil, MakeVPort assumes default values */

/* used by sprite stuff */

If */

 * 2-8-85 Dale conversion to 24 View->ViewPort
); /* if Type = 0 then ColorTable is a table of UMORDS xRCB */
 created from graph.h
 /* defines used for Modes in IVPargs */
#define PFBA

0x40
 Comments
graphics/view.h Page
 struct oprlist *IOFOprlist;
struct oprlist *SHFOprlist;
 UCopList *UCopIns;
DWidth, DHeight;
 DxOffset, DyOffset;
 reserved;
RasInfo *RasInfo;
 struct VlewPort *VlewPort;
 short Dyoffset, DxOffset;
 #include <graphics/gfx.h>
#endif
 #ifndef CRAPHICS_VIEW_H
#define CRAPHICS_VIEW_H
 #1fndef CRAPHICS_CEX_H
 Dale
Dale
 UBYTE Type;
UMCRD Count;
APTR ColorTable;
 Modes:
 Modes;
 struct ColorMap
 UBYTE Flags;
 struct ViewPort
 struct View
 2-4-85
2-8-85
 struct
SHORT
 8 16:38 1985
 struct
 struct
 UMORD
 struct
 struct
 struct
 struct
 date
 SHORT
UNCRD
UNCRD
 ä
 ፝
 8
 used in this */
order to best */
match a font */
 /* ptr to words of proportional spacing data */
/* ptr to words of kerning data */
 of char to baseline */
 /* the row modulo for the strike font data */
/* ptr to location data for the strike font */
bit offset then size */
 request. */
 /* the first character described here */
/* the last character described here */
/* the bit character data */
 smear to affect a bold enhancement */
 preferences and flags nominal font width */
 distance from the top
 name in LN
 access count */
 font beight
 font style
 graphics/text.h Page 2
 *

 tf_CharLoc;
/* 2 words: h
tf_CharSpace;
 tf Flags;
tf XSize;
tf Baseline;
tf BoldSmear;
 tf Accessors;
 tf_CharData;
 tf_Charkern;
 tf_LoChar;
tf_HiChar;
 tf Modulo;
 E Style;
 8 16:38 1985
 UMORD
UBYTE
UMORD
UMORD
UMORD
 UMORD
 UBYTE
 UMORD
 APTR
APTR
 APTR
 APTR
 #end1f
```

\*

•

```
12 /* use mfm style precompensation */
11 /* force uart output to zero */
10 /* enable DSKSYNC register matching */
9 /* (Apple CCR Only) sync on MSB for reading */
8 /* 1 -> 2 us/bit (mfm), 2 -> 4 us/bit (gcr) */
7 /* use aud chan 3 to modulate period of ?? */
6 /* use aud chan 1 to modulate period of ? */
4 /* use aud chan 1 to modulate period of 1 */
3 /* use aud chan 3 to modulate period of 1 */
4 /* use aud chan 1 to modulate volume of 2 */
2 /* use aud chan 2 to modulate volume of ? */
1 /* use aud chan 1 to modulate volume of ? */
0 /* use aud chan 1 to modulate volume of ? */
1 /* use aud chan 1 to modulate volume of 1 */
0 /* use aud chan 0 to modulate volume of 1 */
 ns of precomp
 / 李泰洛洛克 医克克克氏 医克克克氏 医克克克氏 医克克克氏氏 医克克克氏氏 医克克克氏 医克克克氏 医克格特氏 医克格特氏 医克格特氏 医多利氏性
 /* standard set/clear bit */
/* two bits of precompensation */
 $Header: adkbits.h,v 27.1 85/06/24 14:42:34 neil Exp
 adkbits.h -- bit definitions for adkoon register
hardware/addcts.h Page 1
 (1<<15)
(1<<14)
(1<<13)
 (<17)
 #ifndef HARDWARE_ADKBITS_H
#define HARDWARE_ADKBITS_H
 Hendif !HARDWARE_ADKBITS_H
 ADKE_SETCLR
ADKE_PRECOMP1
ADKE_DEPERCOMP0
ADKE_JEMPEREC
ADKE_JEMPEREC
ADKE_JEMPEREC
ADKE_JEMPEREC
ADKE_JEMPEREC
ADKE_JEMPEREC
ADKE_USE2P3
 ADKB_SETCLR
ADKB_PRECOPP1
ADKB_PRECOPP0
ADKB_PRECOPP0
ADKB_URFTERC
ADKB_URFTERC
ADKB_URFTERC
ADKB_URBSYNC
ADKB_USE2P3
 #define ADKE_PRE000NS
#define ADKE_PRE140NS
#define ADKE_PRE280NS
#define ADKE_PRE560NS
 Commodore-Amiga, Inc.
 $Locker:
8 16:38 1985
 #define
#define
#define
#define
#define
 #define
#define
#define
#define
 #define
#define
 #define
#define
#define
#define
#define
 #define
#define
 define
 define
 define
 define
 define
 define
 define
 Idefine
 define
 #define
 define
 80
```

```
/* scroll offsets in this BitMap */
 reuse one of plane ctr bits */ reuse another plane crt bit */
 /* used for dualpf */
 struct RasInfo /* used by callers to and InitDspC() */
 <<
8 16:38 1985 graphics/view.h Page 2
 0x4000
0x2000
0x100
 0x400
0x8000
 RasInfo *Next;
BitMap *BitMap;
RxOffset,RyOffset;
 0x800
 #define CENLOCK_VIDEO 2
#define EXTRA_HALFBRITE 0x80
 Idefine GENLOCK AUDIO
 define SPRITES
 #define VP_HIDE
 DUAL PE
HIRES
 define LACE
 define HAM
 struct
 struct
SHORT
 #define I
 Pend1f
 8
```

```
/* one dot per horizontal line */
 /* definations for blitter control register 1 */
#define LINEMODE 0x1
8 16:38 1985 hardware/blit.h Page 2
 /* defined bits for bitstat */
#define CLEANUP 0x40
#define CLEANUP
 /* stuff for blit qeuer */
 bltnode *n;
(*function)();
 0×10
 0x10
0x8
0x4
 (*cleanup) ();
 0×40
 #endif !HARDWARE_BLIT_H
 #define FILL_OR 0x
#define FILL_XOR 0x
#define FILL_CARRYIN 0x
#define ONEDOT 0x
 blitsize;
 beamsync;
 282
 BLITREVERSE
 SIGNELAG
 #define OCTANTS
#define OCTANT7
#define OCTANT5
#define OCTANT5
#define OCTANT4
#define OCTANT4
#define OCTANT3
#define OCTANT3
 #define OVFLAG
#define SIGNFLA
 struct bltnode
 #define SUL
#define SUL
#define AUL
 struct
 int
char
short
short
int
 define
 D
```

```
bits to right align ashift value */
bits to right align bshift value */
 /* blitter descend direction */
 $Header: blit.h,v 27.1 85/06/24 14:42:40 neil Exp $
 ABCIANECINABC | ÁBNCIANBNCINABNC
ABCINABCIABNC | ANBCINANBCIANBNC
NABCIABNC | NANBCIANBNC
ABCIANBCIABNCIANBNC
 /* definitions for blitter control register 0 */
 /* 2^6 -- 1 */
/* 2^10 - 1 */
 commonly used operations */
hardware/blit.h Page 1
 ::
 #define VSIZEBITS 16-HSIZEBITS
#define HSIZEMASK 0x3f
#define VSIZEMASK 0x3FF
 /* include file for blitter */
 #define MAXBYTESPERROW 128
 BCOB_SRCA_11
BCOF_DEST_0x100
BCOF_SRCC_0x200
BCOF_SRCB_0x400
BCOF_SRCA_0x800
 #ifndef HARDWARE_BLIT_H
#define.HARDWARE_BLIT_H
 12
 Commodore-Amiga, Inc.
 #define ABC 0x80
#define ABWC 0x40
#define ANBC 0x10
#define NABC 0x10
#define NABWC 0x8
#define NABWC 0x8
#define NABWC 0x8
#define NABWC 0x1
 #define ASHIFTSHIFT #define BSHIFTSHIFT
 define BC0B_DEST 8
 BCOB SRCC 9
BCOB SRCB
 SRCB 0x400
SRCA 0x800
 #define DEST 0x100
#define SRCC 0x200
 define HSIZEBITS
 #define BCIF_DESC
 #define A.OR.B
#define A.OR.C
#define A.XOR.C
#define A.TO.D
 $Locker:
8 16:38 1985
 blit.h
 #define #define
 /* some
 define
 define
 define
 define
 define
 define
 #define
 #define
 4 6 2
 80 0
 8
```

```
$Header: custom.h,v 27.1 85/06/24 14:42:53 neil Exp
 /*

* do this to get base of custom registers:

* extern struct Custom custom;
8 16:38 1985 hardware/custom.h Page 1
 HARDWARE_CUSTON_H
HAKDWARE_CUSTON_H
 Commodore-Amiga, Inc.
 vposr;
vhposr;
dskdatr;
joyldat;
clxdat;
adkconr;
pot0dat;
 struct Custom {
 UMORD bltddat;
 diaconr;
 potinp;
serdatr;
dskbytr;
intenar;
 intreqr;
dskpt;
dsklen;
dskdat;
refptr;
 potgo;
joytast;
straqu;
strvbl;
 strlong;
bltcon0;
bltcon1;
bltafwm;
bltalwm;
 vhposw;
copcon;
serdat;
serper;
 strhor;
 'MSod
 custom.h
 $Locker:
 UNORD
 #ifndef | #define |
 D
```

```
Dec 8 16:38 1985 hardware/custom.h Page 3
 };
#endif !HARDWARE_CUSTOM_H
 113
```

```
'* ptr to start of waveform data */
/* length of waveform in words */
/* sample period */
/* volume */
/* sample pair */
wuused */
8 16:38 1985 hardware/custom.h Page 2
 APTR bltbpt;

APTR bltapt;

WWRD bltsize;

UWGRD bltsize;

UWGRD bltsize;

UWGRD bltamod;

UWGRD copins;

UWGRD copins;

UWGRD copins;

UWGRD distry;

UWGRD adkcon;

UWGRD ac_len;

UWGRD bplcon;

UWGRD bplcon;

UWGRD bplcon;

UWGRD bplcon;

UWGRD bplcon;

UWGRD bplcon;

UWGRD bplanod;

UWG
 Dec
```

```
/* Set/Clear control bit. Determines if bits
 /* Disk re-SYNChronized */
/* Busk re-SYNChronized */
/* Serial port Receive Buffer Full */
/* Audio channel 3 block finished */
/* Audio channel 1 block finished */
/* Audio channel 1 block finished */
/* Blitter finished */
/* Blitter finished */
/* Sitter finished */
/* Start of Vertical Blank */
/* I/O Ports and timers */
/* Software interrupt request */
/* Disk Block done */
/* Serial port Transmit Buffer Empty */
 _
 serial port Transmit Buffer Empty */
 /* Master interrupt (enable only) */
 intenabits.h -- definitions for the bits in the interrupt enable
 /* written with a 1 get set or cleared. Bits */
/* written with a zero are allways unchanged */
 $Header: intbits.h,v 27.1 85/06/24 14:43:04 neil Exp
 /* External interrupt */
8 16:38 1985 hardware/intbits.h Page 1
 (and interrupt request) register
 15(12)
15(11)
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15
 (<14)
(<13)
 (1<<1)
1<<0)
 (12)
 #ifndef HARDWARE_INTBITS_H
#define HARDWARE_INTBITS_H
 hendif !HARDWARE_INTBITS_H
 Commodore-Amiga, Inc.
 INTB_PORTS
INTB_SOFTINT
INTB_DSKBLK
 INTB_DSKSYNC
 INTE_SOFTINT
INTE_DSKBLK
 NTE_DSKSYNC
 INTB_SETCLR
 INTE SETCLE
 INT'B_INTEN
 INTB_EXTER
 NTB_VERTB
 INTE_BLIT
 INTERRE
 INTE AUD2
INTE AUD1
 INTE AUDO
 INTE AUDS
 INTB COPER
 NTF_PORTS
 NTE COPER
 NTE AUDO
 NTF_AUD1
 INTB_TBE
 $Locker:
 #define
 define
 define
 define
 Idefine
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 tdefine
 tdefine
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 define
 80
 8
```

```
$Header: dmabits.h,v 27.1 85/06/24 14:42:59 neil Exp
 /*all chma channels */
 /* include file for defining dma control stuff */
 0-8 correspnd to dmaconw definitions */
DMAE_BLIDONE 0x4000
 /* 4 bit mask */
hardware/dmabits.h Page 1
 dmacorw */
 read definitions for dmaconr */
 0×2000
 HARDWARE_DMABITS_H
 HARDWARE DWABITS H
HARDWARE DWABITS H
 DMAF_BLITHOG 0x0400
 0×000F
 0×0001
 0×0002
 0×004
 0×0008
 0x0010
 0×0020
 0x0040
 0x0080
 0×0100
 0x0200
 0×01FF
 DWAB_RASTER 8
DWAB_RASTER 9
DWAB_BLITHOG 10
DWAB_BLITHOG 10
DWAB_BLITNZERO
 Commodore-Amiga, Inc. dmabits.h
 DMAF_BLINZERO
 /* write definitions
 DMAF BLITTER
 DWAB BLITTER
 define DMAF_SETCLR | | |
 DWAB_SETCLR
 DMAB SPRITE
 DWAF_SPRITE
 DMAF_COPPER
 DMAF_RASTER
 DMAE_MASTER
 DMAB AUD2
DMAB AUD3
DMAB DISK
 DMAF_AUD3
 DHAB_AUDO
 DMAB_AUD1
 DMAE_AUDO
 DMAF_AUD2
 DMAF_AUDI
 #define DWAF_ALL
 $Locker:
8 16:38 1985
 #1fndef
 #define
 define
 define
 define
 Idefine
 define
 define
 define
 define
 define
 define
 define
 bits
 #define
 define
 Idefine
 define
 define
 define
 tdefine
 define
 define
 define
 define
 define
 define
 define
 define
 define
 Pend1f
 *
 459786
 80
```

```
the image and the specified Gadgets
 struct
 struct
 JSHORT
 USHORT
 USHORT
 struct
 SHORT
 SHORT
 struct
 بنہ
 >>>
 /* highlight by complementing the selectbox */
/* highlight by "boxing" the selectbox */
 /* if CHECKIT, than set this when selected */
 0x0001 /* whether to check this item if selected */
0x0002 /* set if textual, clear if graphical item */
0x0004 /* set if there's an command sequence */
0x0008 /* set to toggle the check of a menu item */
0x0010 /* set if this item is enabled */
 SPECIAL HIGHLIGHT FLAG state meanings */
5 0x00C0 /* see definitions below for these bits */
7 0x0000 /* use the user's "select image" */
 this item's subs are currently drawn */
this item is currently highlighted */
 for Pointer relativity offsets */
 /* If the BitMap plane pointers are non-zero, this tells the system
 * that the image comes pre-drawn (if the appliprog wants to define * it's own box, in any shape or size it wants!); this is OK by Intuition as long as there's a good correspondence between
 /* dimensions of the entire box */
/* dimensions of the entire box */
/* for Pointer relativity offsets */
 Clipkect and BitMap and used for rendering the requester */
 pointer to a list of Gadgets */
 this item was already toggled */
 see definitions below */
 the box's border */
 the box's text */
 /* pen number for back-plane fill before draws */
 /* don't highlight */
 APPLIPROG AND INTUITION
 <<<<
 *
 Requester *OlderRequest;
LeftEdge, TopEdge;
Width, Height;
 /* Layer in place of clip rect
 · · · ·
 APPLIPROG */
 Intuilext *Reqlext;
 Gadget *ReqGadget;
Border *ReqBorder;
 0x0004
0x0008
 0×0100
 0x00C0
0x0000
0x0040
0x0080
 0×1000
0×2000
0×4000
 RelLeft, RelTop;
 /* FLACS SET BY INTUITION */
 Layer *ReqLayer;
 ReqPad1 [32];
 Back#111;
 BOIL
 FLACS SET BY THE
 #define ITEMENABLED
 #define HICHITEM #define MENUTOCALED
 #define COMMSEQ #define MENUTOCCLE
 Flags;
 #define HICHELACS #define HICHIMACE
 Requester
 #define HICHCOMP
#define HICHCOX
#define HICHONE
 are the
 Mofine CHECKIT
Mofine ITEMIEXT
 --- Requester
 " FLACS SET BY
 #define CHECKED
 Idefine ISDRAWN
 the
 UBYTE
 JSHORT
 UBYTE
 struct
 struct
 SHORT
 struct
 struct
 struct
 SHORT
 SHORT
 struct
ä
 1121
1121
1122
1123
1124
1124
1127
1127
1128
1139
1139
1139
 117
```

```
/* FLACS SET BY THE APPLIFROG */
#define POINTREL 0x0001 /* 1f POINTREL set, TopLeft is relative to point.
#define PREDRAWN 0x0002 /* 1f ReqBMap points to predrawn Requester
| transfer |
 imagery
 /* appliprog can specify that the Gadgat be rendered as either as Bord.

* or an Image. This variable points to which (or equals NULL if then
 this requester is active */
this requester caused by system */
this Requester stops a Refresh broadcast
 part of one of the Gadgets was offwindow
 /* appliprog can specify "highlighted" imagery rather than algorithmic * this can point to either Border or Image data
 /* see below for list of defines */
 /* see below for list of defines */
BitMap *ImageBMap; /* points to the BitMap of PREDEAANN Window *RWindow; /* added. points back to Window */
 describe
 /* by using the MutualExclude word, the appliprog can describe
* which gadgets mutually-exclude which other ones. The bits
 IntuiText *GadgetText; /* text for this gadget */
 /* next gadget in the list */
 /* see below for defines */
 /* "hit box" of gadget */
/* "hit box" of gadget */
 * nothing to be rendered about this Gadget)
 ~ * * * *
 Gadget *NextGadget;
 LeftEdge, TopEdge;
Width, Height;
 FLACS SET BY INTUITION */
 #define REQOEFWINDOW 0x1000
#define REQACTIVE 0x2000
#define SYSREQUEST 0x4000
#define DEFERREFRESH 0x8000
 GadgetRender;
 SelectRender;
 Activation;
 GadgetType;
 UBYTE ReqPad2[36]
 Flags;
 Gadget
 --- Gadget
 struct
```

ø

```
was activated when it was activated. this flag works in conjunction wit
 /* should be a StringInfo flag, but it's OF /* should be a StringInfo flag, but it's
 is suddenly sending you a stream of mouse movement events. If you don't set RELVERIEY, you'll get at least one Mouse Position event.
 /* the flag ENDCADCET, when set, tells the system that this gadget, when
* salected_causes the Requester or AbsMessage to be ended. Requesters or
 /* this String Gadget is actually LONG Int
 /* the FOLLOWBOUSE flag, when set, specifies that you want to receive * reports on mouse movements (ie, you want the REPORTMOUSE function for * your Window). When the Cadget is desclected (immediately if you have * no RELVERIEY) the previous state of the REPORTMOUSE flag is restored * You probably want to set the CADCIMMEDIATE flag when using FOLLOWWOUSE, * since that's the only reasonable way you have of learning why Intuition
 /* this String has an alternate keymap */
 selected, causes the Requester or AbsMessage to be ended. Requesters (AbsMessages that are ended are erased and unlinked from the system */
 * RELVERIFY is set if you want to verify that the pointer was still over
 /* if any of the BORDER flags are set in a Gadget that's included in the
 /* the flag GADCIMMEDIATE, when set, informs the caller that the gadget
 /* this bit for toggle-select mode */
 list when a Window is opened, the corresponding Border will usted to make room for the Gadget
 /* These are the Gadget Type definitions for the variable GadgetType
* gadget number type MUSI start from one. NO TYPES OF ZERO ALLOWED.
* first comes the mask for Gadget flags reserved for Gadget typing
 the gadget when the select button was released
 --- These are the Activation flag bits
 be adjusted to make room for
 0x0040
0x0080
 0x0008
 0×0100
 0×1000
 0×0002
 0×0004
 0x0010
 0×0020
 0×0200
 0×0400
 0×0800
 0x0001
 --- CADCRT TYPES ----
 #define CADCIMMEDIATE
 the RELVERIFY flag
 #define TOGGLESELECT
 STRINGCENTER
 #define CADCDISABLED
 #define BOTTOMBORDER
 define FOLLOWOUSE
 Idefine RICHTBORDER
 STRINGRIGHT
 define LEFTBORDER
 #define ALTKEYMAP
 TOPBORDER
 #define RELVERIFY
 Hoffine ENDCADCET
 #define LONCINT
 define
 define
 define
 332
334
335
335
Heafine CREIROTION 0x0008 /* set if rel to bottom, clear if rel top */
Heafine CREIRIGHT 0x0010 /* set if rel to right, clear if to left */
* set the RELWIDTH bit to spec that Width is relative to width of screen */
 /* set this flag if the GadgetRender and SelectRender point to Image imagery,
 /* combinations in these next two bits specify to which corner the gadget's * Left & Top coordinates are relative. If relative to Top/Left, * these are "normal" coordinates (everything is relative to something in
 /* the CADCOISABLED flag is initialized by you and later set by Intuition * according to your calls to On/OffCadget(). It specifies whether or not * this Cadget is currently disabled from being selected
 * set the RELHEIGHT bit to spec that Height is rel to height of screen */
define CREUHEIGHT 0x0040
 /* the SELECTED flag is initialized by you and set by Intuition. It * specifies whether or not this Gadget is currently selected/highlighted
 /* pointer to a structure of special data required by Proportional,
* String and Integer Gadgets
* in MutualExclude correspond to the gadgets in object containing * the gadget list. If this gadget is selected and a bit is set * in this gadget is MutualExclude and the gadget corresponding to * that bit is currently selected (e.g. bit 2 set and gadget 2 * is currently selected) that gadget must be unselected. * Intuition does the visual unselecting (with checkmarks) and
 /* set bits mean this gadget excludes
 /* user-definable in item ,
/* ptr to general purpose User data
(ignored by In) */
 /* Blast in this alternate image */
 /* Complement the select box */
/* Draw a box around the image */
 * leaves it up to the program to unselect internally
 /* don't highlight */
 that gadget */
 0x0003
0x0000
0x0001
0x0002
 0x0004
 0×0020
 0×0080
 MutualExclude;
 clear if it's a Border
 SpecialInfo;
 UserData;
 #define CADCHICHBITS
 define CRELBOTTOM
 Holefine GADCHIMACE
 Hobfine CRELHEIGHT
 this universe)
 tdefine CRELWIDTH
 #define CADCINACE
 Modeline CADCHCOMP
 #define CADCHNONE
 #define CADCHBOX
 #define SELECTED
 APTR
 APIR
 ä
```

```
this flag sez: gimme that old auto-kno
 hese variables, and then intuition maintenance /* the buffer containing the start and final strin: /* optional buffer for undoing current entry */ /* character position in Buffer */ /* max number of chars in Buffer (including NULL) */
 /* Container width (with any relativity absoluted)
/* Container helght (with any relativity absoluted)
 this is the special data required by the string Gadget (spically, this data will be pointed to by the Gadget variable Specialln
 the knob can move vertically */
no border will be rendered */
 the knob can move horizontally
 aroa,
 minimum horizontal size of the Knob */
 /* character position in the undo buffer */
/* number of characters currently in Buffer */
/* number of whole characters visible in Container
 minimum vertical size of the Knob */
 /* you initialize these variables, and then Intuition maintains them
 the total amount of displayable info is less than the display set the Body variables to the MAX. To adjust these after the Cadget is added to the System, use ModifyProp();
 if User hits the Cotainer outside of the knob, the pot would advance 1/3 (plus or minus) If there's no body to show, or
 Intuition initializes and maintains these variables for you */
Therefore, the AUTOKNOB would fill 1/3 of the container, and
 are the variables that Intuition sets and maintains st/
 /* this flag sez: gimme that ol
/* if set, the knob can move hor
/* if set, the knob can move ver
/* if set, no border will be re
/* set when this Knob is hit */
 /* topleft offset of the container */
 maximum body value */
 maximum pot value */
 HotRes, VPotRes; /* pot increments */
LeftBorder; /* Container borders */
TopBorder; /* Container borders */
 /* horizontal Body */
/* vertical Body */

 0x0001
0x0002
0x0004
0x0008
0x0100
 OXFEFF
OXFFFF
 *UndoBuffer;
 Hor1zBody;
 #define PROPBORDERLESS
 BufferPos;
 VertBody;
 CHeight;
HPotRes,
 Maxchars;
 NumChars;
 DispCount
 *Buffer;
 CW1dth;
 == StringInfo ==
 DispPos;
 UndoPos;
 94
 StringInfo
 FREEHORIZ
```

initial offsets from the origin \*/

pens numbers for rendering \*/

mode for rendering \*/ number of XX pairs \*/

\*\*\*\*

TopEdge; BackPen;

pointer to any other Border too \*/

\*

vector coordinate pairs relitive to LeftTop \*/

```
Border *NextBorder;
 LeftEdge,
 FrontPen,
 DrawMode;
 Count;
 Border
 Image
 SHORT
SHORT
SHORT
SHORT
USHORT
 struct
 SHORT
 UBYTE
UBYTE
BYTE
SHORT
 struct
 struct
*
 بنہ
 505
506
507
508
510
511
512
513
513
515
 519
520
521
522
523
524
525
527
528
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533
533
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537
538
 relative start location for the text */ relative start location for the text */ if NULL, you accept the default */
 1111
 The routine DrawBorder sets up the RastPort with the appropriate The routines, then does a Move to the first coordinate, then does Draws to the subsequent coordinates.

After all the Draws are done, if NextBorder is non-zero we call DrawBorder
 >>>
 pointer to null-terminated text */
continuation to TxWrite another text */
 used for drawing a series of lines which is intended for
 /* If you want this Gadget to use your own Console keymapping, you set the ALTMCTMAP bit in the Activation flags of the Gadget, and then * set this variable to point to your keymap. If you don't set the * ALTMCTMAP, you'll get the standard ASCII keymapping.
 the pen numbers for the rendering */
the mode for rendering the text */
 use as a border drawing, but which may, in fact, be used to render any
 * you can initialize this variable before the gadget is submitted to a Intuition, and then examine it later to discover what integer the user has entered (if the user never plays with the gadget, the value will be unchanged from your initial setting)
 (always relative to the upper-left corner of something) and then the
/* the RastPort containing this Gadget */
 Intuilext is a series of strings that start with a screen location
 The text is null-terminated

 lopEdge;
lextAttr *ITextFont;
 IntuiText *NextText;
 BackPen;
 KeyMap *AltKeyMap;
 Layer *LayerPtr;
 arbitrary vector shape.
 text of the string.
 FrontPen,
DrawMode;
 .eftEdge;
 Data type Border,
 LongInt;
 'IText;
 Intuilext
 == Intuilext
 - Border
 UBYTE
SHORT
SHORT
STRUCK
UBYTE
 struct
 struct
 struct
 UBYTE
 struct
 ä
 بنہ
 449
450
451
453
453
453
453
460
460
460
460
470
470
```

```
//* starting offset relative to some origin
//* starting offsets relative to some origi
//* pixel size (though data is word-aligned
//* pixel sizes */
//* pointer to the actual word-aligned bits
 /* the PlanePick and PlaneOnOff variables work much the same way as the
 If that bit is clear, a "plane" of zeroes will be used. If the bit is set, ones will go out instead. So, for our example: Gadget.PlanePick = 0x02;
 for every plane of the RastPort, you need define data only for the planes that are not entirely zero or one. As you define your Imagery, you will often find that most of the planes ARE just as color selectors. For instance, if you're designing
 will reside in a five-plane display, bit plane zero of your imagery would be all ones, bit plane one would have data that describes the imagery, and bit planes two through four would be all zeroes. Using these flags allows you to avoid wasting all that memory in this way: first, you specify which planes you want your data to appear in using the PlanePick variable. For each bit set in the variable, the next "plane" of your image
 mechanism for image data. Rather than defining the image data
 a two-color Gadget to use colors two and three, and the Gadget
 data is blitted to the display. For each bit clear in this variable, the corresponding bit in PlaneOnOff is examined. If that bit is clear, a "plane" of zeroes will be used.
 Gadgat.PlaneOnOff = 0x01;
Gadgat.PlaneOnOff = 0x01;
Note that this also allows for generic Gadgats, like the System Gadgats, which will work in any number of bit planes. Note also that if you want an Image that is only a filled rectangle, you can get this by setting PlanePick to zero
This is a brief image structure for very simple transfers of
 equivalent GELS Bob variables. It's a space-saving
 image data to a RastPort
 Height, Depth;
 *ImageData;
 lopEdge;
 LeftEdge;
 Width
 Image
```

recursively

Programmer's Programmer's Programmer's Programmer's Programmer's Programmer's

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Programmer's Programmer's \*

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internal

below below

In the USA,

by setting

```
/* You supply a linked-list of Cadgets for your Window.
* This list DOES NOT include system gadgets. You get the standard
* window system gadgets by setting flag-bits in the variable Flags (se
* the bit definitions below)
 ScreenTitle; / if non-null, Screen title when Window is activ
 sprite padding) */
/* sprite width (must be less than or equal to 16) */
 /* for bar/border/gadget rendering */
 /* These variables have the mouse coordinates relative to the * inner-Window of CIMMEZEROZERO Windows. This is compared with the * MouseX and MouseY variables, which contain the mouse coordinates * relative to the upper-left corner of the Window, CIMMEZEROZERO
 /* the CheckMark is a pointer to the imagery that will be used when
 /* these variables contain the width and height of the inner-Window
 * rendering ManuItems of this Window that want to be checkmarked
* if this is equal to NVLL, you'll get the default imagery
 /* sprite data */
/* sprite height (not including
 * the IDCMP Flags and User's and Intuition's Message Ports */
 /* sprite data information for your own Pointer
* set these AFIER you Open the Window by calling SetPointer()
 * User-selected flags */
 BorderRight, BorderBottom;
 /* sprite offsets */
 /* these are for opening/closing the windows */
 IDCMFFlags; /* User-
MsgPort *UserPort, *WindowPort;
 *Descendant;
 IntuiMessage *MessageKey;
 BorderLeft, BorderTop,
RastPort *BorderRPort;
 DetailPen, BlockPen;
 Gadget *FirstGadget;
 Image *CheckMark;
 XOffset, YOffset;
 * GIMMEZEROZERO Windows
 Window *Parent,
 notwithstanding
 GZZWidth;
GZZHeight;
 GZZMouseX;
 CZZMouseY;
 PtrHeight;
 *ExtData;
 PtrWidth;
 *Pointer:
 struct
 USHORT
 struct
 struct
 struct
 struct
 struct
 ULONC
 SHORT
 UBYTE
 UBYTE
 SHORT
 SHORT
 EL SEL
 BYTE
 BYTE
 BYTE
GIMPEZEROZERO when you open the window, then the upper-left of the ClipRect for this window will be upper-left of the BitMap (with correct offsets when in SuperBitMap mode; you MUST select GIMPEZEROZERO when using SuperBitMap). If you don't specify ZeroZero, then you save memory (no allocation of RasPort, Layer, ClipRect and associated Bitmaps), but you also must offset all your writes by BorderTop, BorderLeft and do your own mini-clipping to prevent writing over the
 >>>
 *
 >>>
 relative to upper-left of window */
 /* HOT Reply of this cancels Menu operation
/* Intuition simply wants a ReplyMsg() ASAP
 /* for the linked list in a screen */
 /* this Window's Screen */
/* this Window's very own RastPort */
 * find out fast whether or not this Message is available for me to send
 /* the title text for this window */
 border variables describe the window border. If you specify
 /* count of reqs blocking Window */
 /* IntuiWants verification or MENUCANCEL
 /* screen dimensions of window */
/* screen dimensions of window */
 /* the strip of Menu headers */
 dequester *FirstRequest; /* all active Requesters */
 /* double-click Requester */
 /* see below for defines ^*/
 group of codes is for the WRENCHMESSACE messages ^{\rm 4}/ WHENCHOPEN _{\rm 0}\times0001
 group of codes is for the MENUVERIEY function */
 /* minimum sizes */
/* maximum sizes */
 •
 0x80000000
 Requester *DMRequest;
 MinWidth, MinHeight;
MaxWidth, MaxHeight;
 Window *NextWindow;
 LeftEdge, TopEdge;
 Screen *WScreen;
 RastPort *RPort;
 Menu *MenuStr1p;
 0x0003
 0×0002
 MouseY, MouseX;
 0×0002
 Width, Height;
 system gadgets
 Hoffine LONELYMESSACE
 RegCount;
 #define MENUWAITING
 #define WBENCHCLOSE
 'Title;
 Flags;
 --- IDOMP Codes
 MENUCANCEL
 Window
 --- Window
 $
 struct
 struct
 struct
 struct
 struct
 struct
 SHORT
 UBYTE
 SHORT
 SHORT
 /* This
 SHORT
 SHORT
 ULONG
 define
 Idefine
 define
 struct
 ::
 675
676
```

| ULONG Flags; /* see Window struct for defines */  * You supply a linked-list of Gadgets for your Window.  * This list DDES NOT include system Cadgets. You get the standard  * system Window Cadgets by setting flag-bits in the variable Flags (s  * the bit definitions under the Window structure definition)  */  * the Diacoblark is a pointer to the imagery that will be used when  * rendering Menultems of this Window that want to be checkmarked  * if this is equal to NULL, you'll get the default imagery  */  * the Screen pointer is used only if you've defined a CUSTOMSCREEN and  * want this Window to open in it. If so, you pass the address of the  * Custom Screen structure in this variable. Otherwise, this variable  * Superm Sirmap Window? If so, put the address of your BitMap structure  * in this variable. If not, this variable is ignored and doesn't have  * to be initialized  * the values describe the minimum and maximum sizes of your Windows.  * this Window. You describe the minimum and maximum sizes that the  * this Window. You describe the minimum and maximum sizes that the  * this Window. You describe the minimum and maximum sizes that the  * this Window. You describe the minimum and maximum sizes that the  * this Window. You describe the minimum and maximum sizes that the  * this Window. You describe the minimum and maximum sizes that the  * this Window. You describe the Mindow!  * the setting for that dimension (if Minwidth = 0, MinMidth will b.  * set to the opening Width of the Window!  * You can change these settings later using SetWindow!  * You can change these settings later using SetWindow!  * You can change these settings later using SetWindow! |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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```
/* the Modes for the ViewPort (and View)
 /* the default title for this Screen */
 /* if you are supplying your own BitMap
 /* if you are opening a CUSTOMSCREEN and already have a BitMap that you want used for your Screen, you set the flags CUSTOMBITMAN. * the Types variable and you set this variable to point to your BitMan * structure. The structure will be copied into your Screen structure, * after which you may discard your own BitMap if you want
 UserData; / general-purpose pointer to User data extension */
 LeftEdge, TopEdge, Width, Height, Depth; /* screen dimensions
 /* the Screen type (see defines below)
 /* your own Gadgets for this Screen */
 /* this Screen's default text attribut
 /* for bar/border/gadget rendering */
 /* all the screens types available */
 /* The SCREENTYPE bits are reserved for describing various Screen types
 /* set when Screen is beaping */
 /* this gets set by a call to
ShowTitle()*/
 /* Ta Da! The Worldbench */
/* for that special look */
 Screen Type -----
 /* This layer is for the Screen and Menu bars */
* DisplayBeep() color flashing technique
 DetailPen, BlockPen;
 /* --- the definitions for the #define WBENCHSCREEN 0x0001
 --- FLACS SET BY INTUITION
 available under Intuition.
 Gadget *Gadgets;
 0×0020
 TextAttr *Font;
 0×000E
 #define CUSTOMSCREEN 0x000F
 0x0010
 #define CUSTOMBITMAP 0x0040
 Layer *BarLayer
 *DefaultTitle;
 SaveColor0;
 V1ewModes;
 *ExtData;
 --- NewScreen ---
 #define SCREENTYPE
 NewScreen
 Type;
 #define SHOWIIILE
 #define BEEPING
 USHORT
 struct
 SHORT
 struct
 USHORT
 SHORT
 UBYTE
 UBYTE
 struct
 UBYTE
 UBYTE
 struct
 ä
 1000
1000
1000
1000
1000
1000
1000
 978
979
 966
967
969
970
971
973
975
976
 863
863
863
 953
954
955
955
957
959
960
961
 /* the type variable describes the Screen in which you want this Window to
 /* for bar/border/gadget rendering */
 /* the following variable(s) are maintained by Intuition to support the
 describing the Screen's display */
 /* position relative to upper-left */
 /* null-terminated Title text */
/* for Windows without ScreenTitle */
 /* You supply a linked-list of Gadgets for your Screen.
* This list DOES NOT include system Gadgets. You get the standard
 for this Screen */
* describing the Screen's display
/* describing Screen rendering */
/* auxiliary graphexcess baggage */
/* each screen gets a LayerInfo */
 BartBorder, MenuVBorder, MenuHBorder,
 /* linked list of screens */
/* linked list Screen's Windows */
 one of the
 /* this screen's default font */
 parameters of the screen */
parameters of the screen */
 sizes for this Screen and all Window's in this Screen
 see definitions below */

 open. The type value can either be CUSIONSCREEN or
system standard Screen Types such as WBENCHSCREEN.
 type definitions under the Screen structure

 WBorTop, WBorLeft, WBorRight, WBorBottom;
 /* minimim */
/* maximimiz */
 * system Screen Gadgets by default
 •
 <<
 display data structures
 Layer_Info LayerInfo;
 BarVBorder,
 DetailPen, BlockPen;
 Gadget *FirstGadget;
 Window *FirstWindow;
 ViewPort ViewPort;
RastPort RastPort;
BitMap BitMap;
 MinWidth, MinHeight;
MaxWidth, MaxHeight;
 Screen *NextScreen;
 LeftEdge, TopEdge;
 TextAttr *Font;
 MouseY, MouseX;
 *DefaultTitle;
 Width, Height;
 BarHeight,
 *Title:
 Flags;
 == Screen ==
 Screen
 , the
 /* Bar
 struct
 struct
 struct
 JSHORT
 struct
 struct
 struct
 JEXTE
 USHORT
 struct
 struct
 UBYTE
 */
SHORT
SHORT
 SHORT
 SHORT
 SHORT
 UBYTE
 BYTE
 struct
 ä
 900
901
907
906
909
 910
```

\*

>>

>>>

corner

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>>

>>>

```
/* the system can recover from this ^{\ast}/ /* no recovery possible, this is it ^{\ast}/
 /* these defines are for the COMMISEQ and CHECKII menu stuff. If CHECKII,
 /* these are the AlertNumber defines. If you are calling DisplayAlert() the AlertNumber you supply must have the ALERI_IMPE bits set to one
 * I'll use a generic Width (for all resolutions) for the CheckMark. * If COMMSEQ, likewise I'll use this generic stuff
 #define FOREVER for (;;) #define SIGN(x) (((x) > 0) - ((x) < 0)) #define NOT |
 (n >> 5) & 0x003E)
(n >> 11) & 0x001E)
 $ 20
$ 11
 0x80000000
0x00000000
0x800000000
 Remember *NextRemember;
 (n & 0x3F)
(n & 0x1F)
 (n & 0x1F)
 n & 0x1F)
 = =RJ='s peculiarities ==
 0x003E
0x001E
0xEEEE
 0x001F
 62 23 91
 Remember Size;
 #define ALERT_TYPE
#define RECOVERY_ALERT
#define DEADEND_ALERT
 #define LOWCHECKWIDTH #define LOWCOPPWIDTH
 * of these patterns
 --- Miscellaneous
 #define SHIFTMENU(n)
#define SHIFTITEM(n)
#define SHIFTSUB(n)
 #define MENUNUM(n)
#define ITEMNUM(n)
#define SUBNUM(n)
 *Memory:
 define CHECOMIDIN
 Idefine COMPATIDITH
 #define NOMENU
#define NOITEM
#define NOSUB
#define MENUNULL
 /* = MENU STUFF
 /* = MACROS
 struct
 ULONG
 struct
 1202
1203
1204
1205
1206
1206
1210
1211
1212
1212
1213
1214
1215
1216
1216
 1223
1224
1225
1226
1227
1228
1230
1231
1231
 1220
1221
1221
1222
 1194
1195
1196
 1198
 1200
 1181
1182
 1183
 1189
 1190
 1185
 1186
 1187
 1188
 1191
 1197
 1201
 >>>
 this structure is used for remembering what memory has been allocated to date by a given routine, so that a premature abort or systematic exit can deallocate memory cleanly, easily, and completely
 #define QRE_IP_20 0x0A
/* new printer entries, 3 October 1985 */
#define HP_LASERJET 0x0B
 0x00
0x01
0x02
0x03
0x04
0x06
 0x08
0x09
 0×00
0×01
 0×01
 000×0
 0x000
 0×200
 0x30
0x40
0x800
 0×100
 /* PrintAspect */
#define ASPECT_HCRIZ 0x00
#define ASPECT_VERT 0x01
 #define HP_LASERJET_PLUS
 #define SHADE_CREYSCALE
#define SHADE_COLOR
 /* Print Image */
#define IMACE_POSITIVE
#define IMACE_NEGATIVE
 DIAB ADV D25
 define BROTHER 15XL
 ALPHA P_101
 define EPSON_JX_80
 /* PrinterType */
#define CUSTOM_NAME
 define CBM_MPS1000
define DIAB_630
 define OKIMATE_20
 define DIAB_C_150
 #define US_LEGAL
#define N_TRACTOR
#define W_TRACTOR
#define CUSTOM
 /* PrintSpacing */
#define SIX_LPI
 /* PaperSize */
#define US_LETTER
 /* PrintQuality */
 define EIGHT LPI
 /* PrintShade */
#define SHADE_BW
 Remember
 #define LETTER
 define EPSON
 define DRAFT
#define FINE
 define
 define
 1171
1172
1173
1174
1175
```

1141

1149 1151 1152

1147

1128 1129 1130 1131 1132 1134 1135 1136 1136 1137 1138

1165 1166 1167 1168 1169

1153 1154 1155 1156 1157 1158 1160 1161 1161 1163

```
#ifndef INTUITION_INTUITIONBASE_H #define INTUITION_INTUITIONBASE_H 1
 * Commodore-Amiga, Inc.
 #1fndef
 end1f
 Hend1f
 /* ---
/* When you're defining IntuiText for the Positive and Negative Cadgets

* created by a call to AutoRequest(), these defines will get you

* reasonable-looking text. The only field without a define is the IText

* field; you decide what text goes with the Cadget
 | Qualifiers (Console OR IDOP) ---
|IECODE_LEUTION | IECODE_UP_PREFIX)
 IECODE_RBUTTON | IECODE_UP_PREFIX)
 (IEQUALIFIER_LALT)
(IEQUALIFIER_RALT)
(IEQUALIFIER_LCOMMAND)
(IEQUALIFIER_RCOMMAND)
(AMIGALEFI | AMIGARIGHT)
 IECODE_LBUTTON)
 RCODE_RBUTTON
 NGEL
 0x4C
0x4E
 0x4D
0x10
0x32
 0×4E
 0x36
0x37
 RAMMOUSE Codes and
 #define AUTOBACKEN
#define AUTOBRAMODE
#define AUTOLEFIEDGE
#define AUTOTOPEDGE
#define AUTOTOPEDGE
 Hoefine AUTOFRONIPEN
 #define AUTONEXTTEXT
 #define MENUUP
#define MENUDOWN
#define ALTRIET
#define ANICALEFT
#define ANICALEFT
#define ANICALEFT
 CURSORRIGHT
 SELECTDOWN
 CURSORLEFT
 CURSORDOWN
 KEYCODE_Q
KEYCODE_X
KEYCODE_N
 KEYCODE M
 Mefine SELECTUP
 CURSORUP
 define
 define
 define
 define
 define
 define
 define
 Idefine
 Idefine
 #end1f
 1235
1236
 1265
1266
1267
1268
1269
 1242
1244
1245
 1246
1247
1248
1249
1250
 1251
1253
1254
1255
1256
1259
1260
1261
1261
1263
```

```
functions are simply stubs now, but should be called
 the FirstScreen variable points to the frontmost Screen. Screens are then maintained in a front to back order using Screen.NextScreen
 * Be sure to protect yourself against someone modifying these data as
 struct Screen *FirstScreen; /* for linked list of all screens */
 When done call
 UnlockIBase (lock) where lock is what LockIBase () returned
the IntuitionBase structure and supporting structures
 lock = LockIBase(0), which returns a ULONG.
 This is done by calling:
 -=RJ=- created this file!
 Modification History
Comments
 to be compatible with future releases
 struct Window *ActiveWindow;
 struct Screen *ActiveScreen;
 #include "exec/libraries.h"
 #include "graphics/view.h"
 struct Library LibNode;
 #ifndef EXEC_LIBRARIES_H
 GRAPHICS_VIEW_H
 struct View ViewLord;
 NOTE: these library
 you look at them.
 --- IntuitionBase
 struct IntuitionBase
 3-1-85
 date
```

#end1f

```
extern char 10[],11[],12[]; /* Integer constants 0, 1, 2 */
extern char D5[],D005[]; /* Decimal constants 0.5, 0.05, 0.005 */
extern char P1[],P1D2[],PIM2[]; /* Constant E P, P1/2, P1*2 */
extern char E[]; /* Constant E (base of natural logs) */
extern char M[]; /* Constant log10 (E) */
extern char DER[],RPD[]; /* Degrees per radian, radians per degree extern char SR10[]; /* Work areas */
extern char X[],Y[],Z[]; /* Work areas */
 *
 /* Set to include leading dollar sign */
/* Set if last cvfd input was exponentia.
/* decimal point character */
/* money symbol */
 Set if negative number Number of digit bytes (array length - 2) Decimal exponent (-128 to +127)
 * This file contains information used by the decimal arithmetic package.
 A floating decimal number is a byte array consisting of a two-byte header followed by a byte for each two digits. The header has the
 Maximum number of digit bytes */
Maximum number of bytes */
 extern char *cvfd(), *cvfdx(), *vcfd(), *vcfdi(), *vcfde(), *vcfddc();
8 16:38 1985 lattice/dec.h Page
 ë
 Byte 0, bit 7:
Byte 0, bits 0 to 6
Byte 1
 D_DIG 8
D_MAX (D_DIG+2)
 FDEDIT;
FDTYPE;
FDDECP;
 following format:
 EDMONY
 char
 char
 char
 char
 define
 define
 extern
 extern
 extern
 extern
 **
 26
```

```
non-zero if c is alpha
non-zero if c is upper case
non-zero if c is lower case
non-zero if c is a digit (0 to 9)
non-zero if c is a hexadecimal digit (0 to 9, A to
 non-zero if c is white space
non-zero if c is punctuation
non-zero if c is alpha or digit
non-zero if c is printable (including blank)
non-zero if c is graphic (excluding blank)
non-zero if c is control character
non-zero if c is ASCII
non-zero if valid character for C symbols
non-zero if valid first character for C symbols
 This header file defines various ASCII character manipulation macros,
 _ctype[(c)+1]&(_U|_L|_N))
_ctype[(c)+1]&(_P|_U|_L|_N|_B))
_ctype[(c)+1]&(_P|_U|_L|_L|_N))
_ctype[(c)+1]&(_P|_U|_L|_L|_N))
 (isalnum(c) ||(((c)&i27)==0x5f))
(isalpha(c)||(((c)&i27)==0x5f))
 (c) ((c) - ('a'-'A')) : (c) (s) ((c) - ('a'-'A')) : (c) ((c) + ('a'-'A')) : (c) ((c) + (c) + (a'-'A')) : (c) (c) + (a'-'A') (c) (c) + (a'-'A') (c) (c) + (a'-'A') (c) (c) + (a'-'A') (c) +
 /* character type table */
 control character flag */
 _ctype[(c)+1]&(_U|_L))
_ctype[(c)+1]&_U)
 * lower case flag */
* lower case flag */
* number flag */
* space flag */
* punctuation flag */
 hexadecimal flag */
 (c) <=127)
 blank flag */
 (mstgmed)
8 16:38 1985 lattice/ctype.h Page 1
 ctype
ctype
ctype
ctype
ctype
 to f)

 extern char _ctype[];
 #define isspace(c)
#define ispunct(c)
#define ispunct(c)
#define isprint(c)
#define isprint(c)
#define iscraph(c)
#define iscrapl(c)
 isalpha(c)
isupper(c)
islower(c)
isdigit(c)
isxdigit(c)
 #define isdigit(c)
#define isxdigit(c)
 #define toupper(c)
#define tolower(c)
#define toascii(c)
 isalpha(c)
isupper(c)
 isspace(c)
ispunct(c)
isalnum(c)
isprint(c)
isprint(c)
isgraph(c)
iscril(c)
isascii(c)
 iscsymf (c)
 iscsym(c)
iscsymf(c)
 define islower(c)
 1scsym(c)
 1sascii (
 32 28
 as follows:
 N P
 #define
 #define #define
 tdefine
 define
 define
 tdefine
 define
 define
 define
 define
 define
 define
 tdefine
 :
 8
```

```
8 16:38 1985
 struct
 I ONC
 char
 LONG
LONG
 #define
 define
 200
 FIB
 ~~
 f119.
 relative to Begining Of File */
relative to Current file position */
 * positioned at beginning of file. *
/* Open freshly created file (delete * old file) read/write
 OFFSET_REGINNING /* ancient compatibility
 /* Number of ticks in one second */
 /* Returned by Examine() and ExInfo(), must be on a 4 byte boundary ^{4}/
 Number of days since Jan. 1, 1978 */
 Open existing file read/write
 *
 File is readable by others */
 Number of minutes past midnight */
 /* relative to Begining Of /* relative to Current file /* relative to End Of File
 Synonym */
No other access allowed
 Synonym */
 /* Predefined Amiga DOS global constants */
 0×7EFFFFF
 0x80000000
 Commodore-Amiga, Inc.
 */
1005
 1006
 *
 ಬ
 ,-<u>-</u>
 "dos.library"
 Seek()
 -
lattice/dos.h Page
 /* Mode parameter to Open() #define MODE_OLDFILE
 Passed as type to Lock()
 flb_Protection;
flb_EntryType;
 /* Relative position to S
#define OFFSET_BEGINNING
#define OFFSET_CURRENT
 #define TICKS PER SECOND
 finclude "exec/types.h"
 #ifndef LIBRARIES DOS H
 Hofine OFFSET_BEGINING
 Hofine EXCLUSIVE_LOCK
 struct FileInfoBlock {
 BITSPERBYTE
BYTESPERLONC
BITSPERLONG
 fib_DiskKey
 #1fndef EXEC_TYPES H
 #define MODE NEWFILE
 #define ACCESS_WRITE
 ğ
 Hoffine ACCESS_READ
 ds Minute;
 struct DateStamp {
 Hdefine OFFSET_END
 ds_Days;
 ds_Tick;
 DOSNAME
 /* DateStamp
 define SHARED
 #define MAXINT #define MININT
8 16:38 1985
 Mode 1
 #define
 SMC
 define
 define
 2000
 define
 LONG
 2000
 LONG
 1080
 #end1f
 200
```

```
typedef long BPTR;

typedef long BSTR;

typedef long BSTR;

Long word pointer to BCPL string

#define BADDR (bptr (< 2) /* Convert BPTR to typical C pointer

/* BCPL strings have a length in the first byte and then the characters.
 /* All BCPL data must be long word aligned. BCPL pointers are the long * address (1.e byte address divided by 4 (>>2)) */
 *
 *
 consistent and writeable */
 Which unit disk is (was) mounted on
See defines below */
 is write protected */
is currently being validated
is consistent and writeable *
 ('x')
('x')
 /* number of soft errors on disk */
/* Which unit disk is (was) mounted
/* See defines below */
/* Number of blocks on disk */
/* Number of block in use */
 * Comment associated with file */
 /* Disk Type code */
/* BCPL pointer to volume node */
/* Flag, zero if not in use */
 ('0'<8)
('0'<8)
('0'<8)
 /* Number of bytes in file */
/* Number of blocks in file */
 FIBB are bit definitions, FIBE are field definitions */
 DateStamp fib_Date; /* Date file last changed */
 returned by Info(), must be on a 4 byte boundary */
 ('A'<<16)
('0'<<16)
('D'<<16)
('I'<<16)
 fib_Comment[116]; /* Null terminated.
 103
 * For example: s[0]=3 s[1]=S s[2]=Y s[3]=S
 Disk
 Disk
Disk
 1<<FIBB_WRITE)
1<<FIBB_EXECUTE)
 (1<<FIBB_DELETE)
 (-1)
(('B'<<24)
(('D'<<24)
(('N'<<24)
(('K'<<24)
 (1<<FIBB_READ)
 · · ·
 stands for FileInfoBlock */
lattice/dos.h Page 2
 80
81
82
 /* Errors from IoErr(), etc.
Hoefine ERROR_NO_FREE_STORE
Hoefine ERROR_NO_DEFAULT_DIR
 *
 1d_NumSoftErrors;
 1d_NumBlocksUsed;
 1d_BytesPerBlock
 ID NO DISK PRESENT
 #define ID_UNREADABLE_DISK
 ID_WRITE_PROTECTED
 /* ID stands for InfoData
 IN THE TO NOT REALLY DOS
 fib_NumBlocks;
 /* Disk states */
 #define ID_KICKSTART_DISK
 1d_UnitNumber;
 /* Disk types */
 1d_VolumeNode
 id DiskState;
 1d NumBlocks:
 /* FileInfoBlock */
 1d_DiskType;
 #define ID_VALIDATING
 #define FIBE_EXECUTE
 #define FIBB EXECUTE
 #define ID_VALIDATED
 #define FIBB_DELETE
 #define FIBE_DELETE
 id_InUse;
 #define ID_DOS_DISK
 #define FIBB_WRITE
 #define FIBE_WRITE
 define FIBB READ
 #define FIBE_READ
 struct InfoData {
 /* InfoData */
```

```
The file "/include/libraries/dos.h" contains all the error messages.
 #include "include/libraries/dos.h"
8 16:38 1985 lattice/error.h Page 1
 Do not use this file.
 80
 /* A warning only */
/* Something wrong */
/* Complete or severe failure*/
 /* These are the return codes used by convention by AmigaDOS commands *//* See FALLAT and IE for relvance to EXECUTE files */
Hefine RETURN_OK
 you that a user has issued a break */
 a break */
 /* Bit fields that signal you that a user has issued
 o 10
 define ERROR_OBJECT_IN_USE
define ERROR_OBJECT_EXISTS
idefine ERROR_DIR_NOT_FOUND
#define ERROR_BAD_STREAM_UNAME
#define ERROR_BAD_STREAM_UNAME
#define ERROR_ACTION_NOT_ANGWA
#define ERROR_INVALID_LOCK
#define ERROR_INVALID_LOCK
#define ERROR_INVALID_LOCK
#define ERROR_DISK_NOT_VALIDATED
#define ERROR_DISK_NOT_VALIDATED
#define ERROR_DISK_NOT_VALIDATED
#define ERROR_DISK_NOT_VALIDATED
#define ERROR_DISK_NOT_VALIDATED
#define ERROR_DISK_NOT_VAUNTED
#define ERROR_DISK_NOT_NON_NONTED
#define ERROR_DEVICE_NOT_NONTED
#define ERROR_DEVICE_TROP
#define ERROR_RAITE_PROTECTED
#define ERROR_RAITE_PROTECTED
#define ERROR_RAITE_PROTECTED
#define ERROR_RAITE_PROTECTED
#define ERROR_RAITE_PROTECTED
 lattice/dos.h Page 3
 13
14
15
 HOLIDA ERROR NO MORE ENTRIES
 Adefine ERROR_NOT_A_DOS_DISK Adefine ERROR_NO_DISK
 Bit numbers that signal
```

8 16:38 1985

Dec

define SIGBREAKB\_CTRL\_C #define SIGBREAKB\_CTRL\_E #define SIGBREAKB\_CTRL\_F

Adefine RETURN WARN define RETURN\_FAIL

> 143 145 146 147

142 4

#end1f LIBRARIES\_DOS\_H

148 150 151 151 152 153 154 156 156 156 158

```
* The following structure is a UNIX file block that retains information
 /* file is open */
/* reading is allowed */
/* writing is allowed */
* access file with no translation */
/* append mode flag */
/* no-close flag */
 * a file being accessed via the level 1 1/0 functions.
 /* number of UFBs defined */
 /* file handle */
 /* flags */
8 16:38 1985 lattice/los1.h Page 1
 * UFB.ufbflg definitions
 * UFB.ufbtyp definitions
 #define UFB_WA 0x20
#define UFB_NT 0x10
#define UFB_AP 8
#define UFB_NC 4
 #define UFB_OP 0x80
#define UFB_RA 0x40
 #define D_CON 1
#define D_RRN 2
#define D_AUX 3
#define D_NULL 4
 #define NUFBS 20
 define D_DISK 0
 char ufbflg;
 char ufbtyp;
 struct UFB
 int ufbfh;
 III MSDOS1
 endif
 8
```

```
/* Read-only value (right byte of mode word) */
/* Write-only value */
/* Read-write value */
 * The following symbols are used for the "open" and "creat" functions.
 /* Raw I/O flag (Lattice feature) */
 * The following symbols are used for the "fcntl" function.
 * Duplicate file descriptor */
* Get file descriptor flags */
* Set file descriptor flags */
* Get file flags */
* Set file flags */
 /* Non-blocking I/O flag */
/* Append mode flag */
/* File creation flag */
/* File truncation flag */
/* Exclusive access flag */
8 16:38 1985 lattice/fcntl.h Page 1
 #define O_CREAT 0x0100
#define O_TRUNC 0x200
 #define O_EXCL 0x400
 #define O_RAW 0x8000
 #define O_RDONLY 0
#define O_WRONLY 1
#define O_RDWR 2
 #define O_NDELAY 4 #define O_APPEND 8
 #define F_DUPFD 0
#define F_GETFD 1
#define F_GETFL 3
#define F_GETFL 4
 :
 10
111
112
113
114
116
117
117
118
118
118
119
119
125
125
126
127
 Dec
```

```
* Redefine secondary similation function names to become primary names * for systems without a Numeric Data Processor.
 * Error codes generated by basic arithmetic operations (+ - * /)
 /* domain error */
/* singularity */
/* overflow */
/* underflow */
/* total loss of significance */
/* partial loss of significance */
 /* error type */
/* math function name */
/* function arguments */
/* proposed return value */
 * Structure to hold information about math exceptions
 * Exception type codes, found in exception.type
8 16:38 1985 lattice/math.h Page 1
 double argl, arg2;
double retval;
 #define _ldexp ldexp
#define _log log
#define _log10 log10
#define _modf modf
 char *name;
 #define DOWAIN 1
#define SING 2
#define OVERFLOM 3
#define UNDERFLOM 4
#define PLOSS 6
 define _pow pow
define _pow2 pow2
define _sin sin
 define _tan tan
|define _tanh tanh
|endif
 define _sinh sinh
 define _asin asin
 define _atan atan
 #define_cosh cosh
 define _fabs fabs
 define sqrt sqrt
 #define _acos acos
 Int type;
 exception
 define _cot cot
 define _cos cos
 define _exp exp
 Ifdef NONDP
 struct
 33438
 Dec
Dec
```

```
8 16:38 1985 lattice/limits.h Page 1
 1 #define HUCE_VAL 1.797693E+308
```

```
#define getchar() getc(stdin)
#define putc(c,p) (--(p)-\define\define) ((int) (*(p)-\define) (-(p)):_flsbf((c) p))
#define putchar(c) putc(c,stdout)
#define putchar(c) putc(c,stdout)
#define feor(p) (((p)-\define
 current buffer pointer */
byte count for reading */
byte count for writing */
base address of I/O buffer
 * This header file defines the information used by the standard I/O
 size of buffer */
/* single char buffer */
(pad to even number of bytes) */
 standard input file pointer */
standard output file pointer */
 /* standard input file pointer */
/* standard output file pointer */
/* standard error file pointer */
 /* read-write (update) flag */
 standard buffer size */
standard buffer size */
maximum number of files */
 private buffer flag */
 null pointer value */
 (--(p)->_rcnt>=0? *(p)->_ptr++:_filbf(p))
 non-buffered flag */
 end-of-file flag */
 /* shorthand */
/* end-of-file code */
 /* control flags */
/* file number */
/* size of buffer */
 write flag */
 error flag */
 read flag */
 current
 current

 *
 :::
 *
 extern struct _lobuf _lob[_NFILE];
8 16:38 1985 lattice/stdio.h Page 1
 define FILE struct _lobuf
 Mefine stdin (£_iob[0])
Mefine stdout (£_iob[1])
Mefine stderr (£_iob[2])
 cbuff;
 * base
 *_ptr;
 #define_BUFSIZ 512
 #define BUFSIZ 512
 define IOMYBUE 8
 #define_IOERR 32
#define_IOSTRG 64
 #define_IOEOF 16
 #define_IORW 128
 Hdefine _IOREAD 1
 define IONBE 4
 #define _IOWRT 2
 define EOF (-1)
 님
 Modefine JNFILE
 getc(p)
 define NULL 0
 #define stderr
 instaned char
 struct _lobuf
 insigned char
 unsigned char
 define NULL
 #1fndef NULL
 _flag;
_file;
 package.
 _rant;
 s1ze;
 Mont
 Hf SPIR
 define
 Pendif
 end1f
 else
 8 6 0
 200
```

```
extern long ato!().strto!().lrand48().nrand48().mrand48().jrand48();
extern double atof().exp().log(),log(),pow().sqrt();
extern double floor().coll().fmod().fabs().frexp().ldexp(),modf();
extern double sink().cosk().tank().sin().cosk().tan().cot().asin();
extern double atan().atan2().except();
extern double drand48().erand48();
 natural log of huge value */
 /* PI divided by 2 */
/* PI divided by 4 */
/* Inverse of PI */
/* Inverse of PID2 */
 not a number (invalid operation) */
 floating point arithmetic error */
 /* huge value */
/* tiny value */
/* natural log of
/* natural log of
 UNIX error code "/
 zero divisor
 underflow */
overflow */
 PID2 1.570796.32679489661923
PID4 0.78539816.339744830962
I_PI 0.31830988618379067154
I_PID2 0.63661977236758134308
 3.14159265358979323846
8 16:38 1985 lattice/math.h Page 2
 int ato1().matherr();

 HUCE 1.7976936308
TINY 2.26-308
LOCHUCE 709.778
LOCTINY -708.396
 <:
 * External declarations
 short *seed48();
 *ecut()
 _fperr;
 FPENAN 4
 Int errno;
 define FPEUND
 #define FPEOVE
#define FPEZDV
 * Constants
 char
 Ħ
 #define
 define
 Idefine
 define
 #define
 Adefine
 define
 Adefine
 #define
 fdefine
 extern
 extern
 extern
 extern
 extern
 52 28 69 69
```

```
/* the following 8 bytes are not actually considered a part of the biskfontHeader, but immediately preced it. The NextSegment is a supplied by the linker/loader, and the ReturnCode is the code // at the beginning of the font in case someone runs it...

/* ULONG dfh.ReturnCode; /* MOVEQ #0, DO: RTS */
/* ULONG dfh.ReturnCode; /* MOVEQ #0, DO: RTS */
/* here then is the official start of the DiskFontHeader...
struct Node dfh.DF: /* node to link disk fonts */
UMORD dfh.FileID; /* the font revision */
UMORD dfh.Revision; /* the font revision */
LONG dfh.Segment; /* the segment address when loaded */
char dfh.Name[MAKEONINAME]; /* the font name (mull terminated) */
struct TextFont dfh.TF:/* loaded TextFont structure */
 *
 the following 8 bytes are not actually considered a part of the
 #define LIBRARIES DISKFONT H
 UMORD fch_FileID; /* FCH_ID */
UMORD fch_NumEntries; /* the number of FontContents elements */
 DEH_ID 0x0f80 MAXEONINAME 32 /* font name including ".font\0" */
 /* including null terminator */
 struct FontContents fch_FC[]; */
8 16:38 1985 libraries/diskfont.h Page 1
 Commodore-Amiga, Inc.
 struct FontContents {
 char fc_FileName[MAXFONTPATH];
 UMORD fc_YSize;
 UBYTE fc_Style;
 LIBRARIES_DISKFONT_H
 diskfont library definitions
 0×0 £00
 MAXEONTPATH 256
 CRAPHICS_TEXT_H
 "graphics/text.h"
 struct FontContentsHeader
 EXEC_NODES_H
 EXEC LISTS H
 "exec/nodes.h"
 "exec/lists.h"
 struct DiskFontHeader
 FGH_ID
 fc Flags
 #include '
#endif
 UMORD
UBYTE
UBYTE
 #define
#define
 #Include
 #include
 #define
 #define
 #1fudef
 #1fndef
 #1 fndef
 #ifndef
 *
 endif
 ä
 45257
 8
 2 2
 8
```

```
/* relative to Begining Of File */
/* relative to Current file position */
/* relative to End Of File */
 /* Open existing file read/write

* positioned at beginning of file. */

/* Open freshly created file (delete

* old file) read/write

*/
 OFFSET_BEGINNING /* ancient compatibility */
 50 /* Number of ticks in one second */
 /* Number of days since Jan. 1, 1978 */
/* Number of minutes past midnight */
/* Number of ticks past minute */
 /* File is readable by others */
/* Synonym */
/* No other access allowed */
/* Synonym */
 /* Predefined Amiga DOS global constants */
Dec 12 18:20 1985 libraries/dos.h Page
 0×7EFFFFF
 0x80000000
 Commodore-Amiga, Inc.
 1005
 1006
 /* Relative position to Seek() */
#define OFFSET_BECINNING -1
#define OFFSET_CURRENT 0
#define OFFSET_END 1
 ,177₁
 #define DOSNAME "dos.llbrary"
 œ
 /* Mode parameter to Open()
#define MODE_OLDFILE
 /* Passed as type to Lock() #define SHARED_LOCK
 }; /* DateStamp */
idefine TICKS_PER_SECOND
 #ifndef LIBRARIES DOS H
 #include "exec/types.h"
 #define OFFSET_BEGINING
 #define BYTESPERLONG
#define BITSPERLONG
#define MAXINT
#define MININT
 #define EXCLUSIVE LOCK
 #1fndef EXEC_TYPES_H
 #define MODE_NEWFILE
 define ACCESS_WRITE
 define ACCESS READ
 #define BITSPERBYTE
 LONG ds_Days;
LONG ds_Minute;
 struct DateStamp {
 ds_Tick;
 #end1f
 intrios; /* number of AvailFonts elements */
AvailFonts afh_AF[]; */
 UMORD af_Type; /* MEMORY or DISK */
struct TextAttr af_Attr; /* text attributes for font */
8 16:38 1985 libraries/diskfont.h Page
 0 1
 struct AvailFontsHeader {
 UNORD aft_NumEntries;
 AFE_MEMORY
AFE_DISK 1
AFE_DISK 2
 struct AvailFonts {
 struct
 define
 #define
 #define
 define
 •
 #end1f
 ä
 ننہ
 8
 61
62
63
64
66
66
67
67
77
77
77
77
77
77
```

```
typedef long BPTR; /* Long word pointer */
typedef long BSTR; /* Long word pointer to BCPL string */
#define BADDR(bptr << 2) /* Convert BPTR to typical C pointer */
/* BCPL strings have a length in the first byte and then the characters.
 Disk is write protected */
Disk is currently being validated */
Disk is consistent and writeable */
 Which unit disk is (was) mounted on */
See defines below */
Number of blocks on disk */
 number of soft errors on disk */
 BCPL pointer to volume node */
 Comment associated with file */
 ('0'<8)
('0'<8)
('0'<8)
 Flag, zero if not in use */
 fib_Size; /* Number of bytes in file */
fib_NumBlocks; /* Number of blocks in file */
DateStamp fib_Date;/* Date file last changed */
fib_Comment[116]; /* Null terminated.

* Comment associated with file
 Number of block in use */
 /* FIB stands for FileInfoBlock "/
/* FIBB are bit definitions, FIBF are field definitions */
 Number of bytes in file */
 returned by Info(), must be on a 4 byte boundary */
 Disk Type code */
 ('A'<<16)
('0'<<16)
('D'<<16)
('I'<<16)
 103
 For example: s[0]=3 s[1]=S s[2]=Y s[3]=S
 ID_VALAL.

/* Disk types */
Ine ID_NO_DISK_PRESENT (-1)
Ine ID_UNREADABLE_DISK ('16'<24) | ('v'
"n DOS_DISK ('10'<24) | ('n'<24) | (
Dec 12 18:20 1985 libraries/dos.h Page 2
 (1<<FIBB_WRITE)
(1<<FIBB_EXECUTE)
(1<<FIBB_DELETE)
 (1<<FIBB_READ)
 :::
 FIB stands for FileInfoBlock */
 :::

 /* Errors from loErr(), etc. */
#define ERROR_NO_FREE_STORE
#define ERROR_NO_DEFAULT_DIR
 80
81
82
 /* ID stands for InfoData */
 struct InfoData {
 LONG id_NumSoftErrors;
 1d_NumBlocksUsed;
 ld_BytesPerBlock;
 #define ID_WRITE_PROTECTED
 #define ID_NOT_REALLY_DOS #define ID_KICKSTART_DISK
 /* Disk states */
 1d_UnitNumber;
 id_DiskType;
id_VolumeNode;
 id DiskState;
 id_NumBlocks;
 *
 #define ID_VALIDATING #define ID_VALIDATED
 #define FIBE_WRITE #define FIBE_EXECUTE
 define ID_DOS_DISK
 #define FIBB_EXECUTE
 1d_InUse;
 /* FileInfoBlock
 #define FIBB_DELETE
 Adefine FIBE DELETE
 #define FIBB_READ #define FIBB_WRITE
 #define FIBE_READ
 /* InfoData */
 struct
 LONG
 define
 define
 200
 char
 LONG
 LONG
 LONG
 LONG
 SEC
 LONG
 *
 D-68
```

```
0 /* No problems, success */
5 /* A warning only */
10 /* Something wrong */
30 /* Complete or severe failure*/
 /* Bit fields that signal you that a user has issued a break */
/* for example: if (SetSignal(0,0) & BREAK_CTRL_CF) cleanup_and_exit(); */
#define SIGRREAKE_CTRL_C (1<<SIGRREAKE_CTRL_C)
 These are the return codes used by convention by AmigaDOS commands */
 you that a user has issued a break */
 See FAILAT and IF for relvance to EXECUTE files
 1.<sigrama ciri.c)
(1.<sigrama ciri.d)
(1.<sigrama ciri.d)
(1.<sigrama ciri.e)
 n
Dec 12 18:20 1985 libraries/dos.h Page
 ERROR ACTION NOT LARGE
ERROR ACTION NOT KNOWN
ERROR INVALID COMPONENT NAME
ERROR DISC NOT VALIDATED
ERROR DISK NOT VALIDATED
ERROR DISK NOT VALIDATED
ERROR RENAME ACROSS DEVICES
ERROR DIRECTORY NOT EMPTY
 ERROR TOO MANY LEVELS
ERROR DEVICE NOT MOUNTED
ERROR SEEK ERROR
ERROR COMMENT TOO BIG
 ERROR OBJECT EXISTS
ERROR DIR NOT FOUND
ERROR OBJECT NOT FOUND
ERROR BAD STREAM NAME
 #define ERROR DISK_FULL
#define ERROR DELETE_PROTECTED
#define ERROR WRITE_PROTECTED
#define ERROR READ_PROTECTED
 #define ERROR READ FROTECTED
#define ERROR NOT A DOS DISK
#define ERROR NO DISK
#define ERROR NO DISK
#define ERROR NO MORE_ENTRIES
 /* Bit numbers that signal
 ERROR_OBJECT_IN_USE
 #define SIGBREAKF_CTRL_D
 #define SIGBREAKF_CTRL_F
 #define SIGBREAKB_CTRL_F
#define SIGBREAKB_CTRL_F
 #define SIGEREAKF_CIRL_E
 #define SIGBREAKB_CTRL_C
 #define SICEREAKB_CTRL_D
 #endif LIBRARIES_DOS_H
 #define RETURN_WARN
#define RETURN_ERROR
#define RETURN_FAIL
 #define RETURN_OK
 #define E
#define E
 #define
 define
 #define
 #define
 #define
 #define
 #define
 #define
 #define
 #define
 #define
 #define
 #define
 #define
 #define
```

```
8 16:38 1985 libraries/dosextens.h Page
 struct MagPort #fh Port
 *do_Link;
 struct Message * dp_Link;
struct MsgPort * dp_Port;
 ф_Тура
ф_Res1
ф_Res2
 th Funcs
 m.Arg;
m.Argi m.Args
 struct FileHandle {
 struct StandardPacket
 }; /* FileHandle */
 Device packets
 do_Status2
 do_ButAddr
 th Funcs;
 do Action
 struct DosPacket
 th Funci
 fh Func3;
 LONG dp_Arg7;
/* DosPacket */
 fh Func2
 do_Status
 fh.Pos;
 LONG dp_Type;
 LONG dp_Res1;
 ft Buf;
 fh End;
 LONG dp_Res2;
 $\frac{4}{4}\frac{2}{3}\frac{2}\frac{2}{3}\frac{2}{3}\frac{2}{3}\frac{2}{3}\frac{2}{3}\frac{2}{3}\frac{2}{3}\frac{2}{3}\frac{2}{3}\frac{2}{3}\frac{2}{3}\frac{2}{3}\frac{2}{3}\frac{2}{3}\frac{2}{3}\frac{2}{3}\frac{2}{3}\frac{2}\frac{2}{3}\frac{2}{3}\frac{2}{3}\frac{2}{3}\frac{2}{3}\frac
 LONG do Arge;
 de Argi
 de Arg5
 2000
 IONG
IONG
 LONG
 LONG
 LONG
 #define
 #define
 S
 define
 LONG
 LONG
 E ONC
 defina
 define
 #define
 * *
 101
102
103
104
105
105
106
107
1108
8(1109)
 t; /* This is RPTR address from DOS functions */

**Remaining variables on 4 byte boundaries */

**Array of seg lists used by this process */

**Size of process stack in bytes

**Global vector for this process (BCPL)

**A Clipal vector for this process stack

**A Value of secondary end of process stack

**A Value of secondary result from last call */

**Lock associated with current directory

**Current CII Input Stream

**Console handler process for the

current vindow
 ,,,,,,,,,,
 >>>>
 /* All DGS processes have this structure */
/* Create and Device Proc returns pointer to the MsgPort in this structure */
/* dev_proc = (struct Process *) (DeviceProc(..) - sizeof(struct Task)): */
 Eunction to be called when awaiting msg Window for error printing */
 File handler process for current drive
 _
 Open() and other routines that return a file. You need only worry about this struct to do async lo's via PutMsg() instead of standard file system calls */
 pointer to ConsoleLineInterpreter
 pointer to previous stack frame
 The long word address (EPTR) of this structure is returned by
 /* DOS structures not needed for the casual DOS user */
8 16:38 1985 libraries/dosextens.h Page 1
 Commodore-Amiga, Inc.

 #define LIBRARIES_DOSEXTENS_H 1
 MsgPort pr_MsgPort;
 #1fndef LIBRARIES DOSEXTENS H
 dosextens.h
 pr_FileSystemTask
 pr_Task:
 include "exec/libraries.h"
 pr_CLI;
pr_ReturnAddr;
pr_PktWalt;
 pr_ConsoleTask;
 include "libraries/dos.h"
 pr_CurrentD1r;
 pr_StackSize;
 ArIR pr_WindowPtr;
/* Process */
 pr_StackBase;
 Hifndef EXEC LIBRARIES H
 include "exec/types.h"
 include "exec/ports.h"
 include "exec/tasks.h"
 #1 fndef LIBRARIES DOS H
 pr_GlobVec;
 pr_SeqList;
 pr_TaskNum;
 pr_Result2;
 #1 fndef EXEC_TYPES H
 #1 fndef EXEC_TASKS_H
 Manual EXEC PORTS H
 pr_CIS:
 pr_cos:
 struct Process {
struct Task
 struct
 200
 P IN S
 FORCE BETTE
 EPIR EPIR
 AP IR AP IR
 M AI A
 APTR
 endif
 endif
 endif
 endif
 end1f
 ä
 Dec
 D-69
```

```
* that would have been returned by the
* function, e.g. Write ('W') returns actua
 * length written */
/* For file system calls this is what would
 /* For file system calls this is the result
 'W' means Write to the
 Address is negative if a plain file
 A Packet does not require the Message to be before it in memory, but for convenience it is useful to associate the two.

Also see the function init_std_pkt for initializing this structure */
 * have been returned by IoErr() */
 in each send. */
 /* EXEC message
/* Reply port for the packet */
* Port to do puthws() to
* Address to monetate
 Reply port for the packet */
Must be filled in each send.
See ACTION... below and
'R' means Beach.
 \prime^* This is the extension to EXEC Messages used by DOS */
 'R' means Read,
 * file system */
 EXEC message
 common equivalents */
 struct MagPort *fh_Type;
 struct Message sp.Msg;
struct DosPacket sp.Pkt;
}; /* StandardPacket */
struct Message *fh_Link;
```

```
struct
 ።
 ፝
 218
219
220
221
222
223
224
 216
 180
181
182
183
184
185
186
186
189
189
Dec
 >>>>>
 - 5
 /* [0] is max number of CLI's
* [1] is APTR to process id of CLI
* [n] is APTR to process id of CLI
 described below */
al vector */
p of DOS */
 for the disk validator process
 *
 This is the data at positive offsets from the library node. Negative offsets from the node is the jump table to DOS functions node = (struct DosLibrary *) OpenLibrary("dos.library" ...)
 ot the Info structure
 /* Pointer to RootNode, describe
/* Pointer to BCPL global vector
/* Private register dump of DOS
 for the CLI
 Current time
 /* SegList // Current 1
/* SegList // SegList //
 Segilst Pointer
 8 16:38 1985 libraries/dosextens.h Page 3
 12 12 17
 BPTR rn_ConsoleSegment; /*
struct DateStamp rn_Time; /*
LONG rn_RestartSeg; /*
BPTR rn_Info; /*
/* RootNode */
 *
 DOS library node structure.
 ACTION EXAMINE OBJECT
 ACTION_CURRENT_VOLUME
 ACTION DELETE OBJECT
 ACTION LOCATE OBJECT
 ACTION_RENAME_OBJECT
 ACTION EXAMINE NEXT
 ACTION_INHIBIT
ACTION_DISK_TYPE
ACTION_DISK_CHANGE
 ACTION SET PROTECT
 ACTION SET COMMENT
 ACTION RENAME DISK
 rn_TaskArray;
 ACTION CREATE DIR
 ACTION_DISK_INFO
ACTION_INFO
 ACTION FREE LOCK
 ACTION WAIT CHAR
 ACTION GET BLOCK
 ACTION COPY DIR
 ACTION SET JMAP
 DosLibrary */
 ACTION PARENT
 ACTION WRITE
 ACTION_TIMER
 ACTION EVENT
 ACTION READ
 $$$$
$$$$
 <u>م</u>:
 define ACTION_NIL
 ACTION DIE
 types */
 struct RootNode
 LONG
LONG
LONG
 HP IR
 Packet
 APTR
 define
 define
 define
 define
 define
 define
 #define
 #define
 define
 define
 define
 define
 •
 define
 define
 #define
 tdefine
 define
 define
 define
 define
 define
 tdefine
 define
 define
 define
 define
 ä
 ።
 *
 8
 - D-70
```

```
8 16:38 1985 libraries/dosextens.h Page
 cll_DefaultStack;
 cli_CurrentImput;
cli_CommandFile;
 CommandLineInterface
 cli_Interactive;
 cli_CommandName;
 cli_CommandDir;
 cll_Background;
 cli_ReturnCode;
 cli FailLevel;
 di_Handlers;
 cli Result2;
 di_NetHand;
 cli_Module;
 di Devinfo;
 di_Devices;
 c11_SetName
 #define DLT_DEVICE (#define DLT_DIRECTORY
 cli Prompt;
 DosInfo {
IR di_McName;
 struct DeviceList {
 #define DLT_VOLUME
 /* DosInfo */
 LONC
RPTR
RPTR
 LONG
 BPTR
BSTR
LONG
LONG
BPTR
BPTR
 LONG
EPTR
FONG
BSTR
BSTR
```

```
/* Transcendental math function
SPSIncos();
 /* Math conversion functions *
 /* Basic math functions */
 SPAtan(); /* Transco
SPTan(), SPSincos()
SPTanh();
SPLog10(), SPPow();
 ((FLOAT) 3.1415192653857)
(((FLOAT) 2) * P1)
(P1 / ((FLOAT) 2))
(FLOAT) 4))
((FLOAT) 2.7182818284590453)
((FLOAT) 2.3025850929940456)
 general floating point declarations
 ((int) (x)
((int) ((x) + 0.5))
((FLOAT) (1))
8 16:38 1985 libraries/mathffp.h Page 1
 ((FLOAT) 10.0)
((FLOAT) 1.0)
((FLOAT) 0.5)
((FLOAT) 0.0)
 SPAcos (), SPCos (), SPCos (), SPCosh (), SPLog (), SPLog (), SPLog (), SPF Lees ();
 ILIBRARIES MATHEFP H
 ; () sqe
 abf();
 SPAsin (),
SPSin (),
SPSinh (),
SPSup (),
SPSqrt (),
 trunc(x)
round(x)
itof(i)
 SPF1x();
SPCup();
SPCup();
SPTSt();
SPNeg();
SPNeg();
SPNeg();
SPNeg();
SPNeg();
SPNeg();
SPNeg();
 #define FPTEN
#define FPONE
#define FPHALE
#define FPZERO
 afp(),
 #define PI
#define IMD_PI
 #define LOC10
 Idefine PI4
 #define PI2
 #define t
#define r
#define i
 define
 int
ELOAT
int
int
ELOAT
ELOAT
ELOAT
ELOAT
 end1f
 FLOAT
FLOAT
FLOAT
FLOAT
 FLOAT
 Dec
```

|                      |                                        |                                                      | <br> | <br> | <br> |      |  |
|----------------------|----------------------------------------|------------------------------------------------------|------|------|------|------|--|
|                      |                                        |                                                      |      |      |      |      |  |
|                      | ````                                   |                                                      |      |      |      |      |  |
|                      |                                        |                                                      |      |      |      |      |  |
|                      |                                        |                                                      |      |      |      |      |  |
|                      |                                        |                                                      |      |      |      |      |  |
| Page 1               | Inc.                                   |                                                      |      |      |      |      |  |
| resources/cia.h Page | Amiga,                                 | source"                                              |      |      |      |      |  |
| resource             | emodore-<br>a.h                        | ciaa.res<br>ciab.res                                 |      |      |      |      |  |
|                      | /************************************* | CIAANAME "ciaa.resource"<br>CIAENAME "ciab.resource" |      |      |      |      |  |
| Dec 12 18:20 1985    |                                        |                                                      |      |      |      |      |  |
| 200                  |                                        | #define<br>#define                                   |      |      |      | <br> |  |

```
/* idle command for dsklen register
 is the disk currently busy? */
 the disk currently busy? */
 This way if the name is ever changed you will pick up the
 unit three is allocated */
 unit three is allocated */
 unit zero is allocated */
 unit zero is allocated */
 unit one is allocated #/
unit two is allocated #/
 unit one is allocated */
unit two is allocated */
 get the name of the
 [LIB_BASE - 0*LIB_VECTSIZE]
[LIB_BASE - 1*LIB_VECTSIZE]
[LIB_BASE - 2*LIB_VECTSIZE]
 Library dr_Library;
DiscResourceUnit *dr_Current;
 *dr_ClaResource;
dr_UnitID[4];
 dr_Maiting;
dr_DiscBlock;
dr_DiscSync;
 ş
 dr_SysLib;
8 16:38 1985 resources/disk.h Page 2
 DISKNAME is a generic macro to
 dr_Flags;
 #define DISKNAME "disk.resource"
 dr_pad;
 * Resource specific commands
 0×4000
 (1<<3)
(1<<7)
 change automatically.
 DR ALLOCUNIT
DR FREEUNIT
DR GETUNIT
 Interrupt
 Interrupt
 struct Interrupt
 dr_Flags entries
 DRF_ALLOC1
 struct Library
 Idefine DSKDMAOEF
 Library
 define DRB_ALLOCO
 #define DRB_ALLOC2
#define DRB_ALLOC3
 DRB ACTIVE
 DRF_ALLOCO
 DRF_ALLOC3
 DRE ACTIVE
 #define DRB_ALLOCI
 Hardware Magic
 List
 struct
 struct
 struct
 struct
 struct
 struct
 #define
#define
 define
 define
 define
 define
 #define
#define
 #define
 *
 8
```

```
$Header: disk.h,v 27.2 85/07/12 23:12:44 nell Exp
 external declarations for disk resources
 Commodore-Amiga, Inc.
8 16:38 1985 resources/disk.h Page 1
 struct Interrupt dru_DiscBlock;
struct Interrupt dru_DiscSync;
 struct Message dru_Message;
 struct Interrupt dru Index
 #include "exec/interrupts.h"
|endif !EXEC_INTERRUFIS_H
 #include "exec/libraries.h"
#endif !EXEC_LIBRARIES_H
 #1fndef EXEC_INTERRUPTS_H
 #1fndef RESOURCES DISK H
 #1fndef EXEC_LIBRARIES_H
 struct DiscResourceUnit {
 Idefine RESOURCES DISK H
 disk.h
 #include "exec/types.h"
#endif !EXEC_TYPES_H
 finclude "exec/lists.h"
Mendif !EXEC_LISTS_H
 #include "exec/ports.h"
#endif IEXEC_PORTS_H
 1fndef EXEC_TYPES_H
 #1fndef EXEC_PORTS_H
 #Ifndef EXEC LISTS H
 Resource structures
 struct DiscResource {
 SOURCE CONTROL
 $Locker:
```

```
/* Commodore-Aniga, Inc. */
/* misc.h /**
 (LIB_BASE)
(LIB_BASE + LIB_VECSIZE)
 $Header: misc.h,v 27.3 85/07/12 16:28:29 neil Exp
 external declarations for misc system resources
 struct MiscResource {
 struct Library;
 ULONG mr_AllocArray[NUMMRTYPES];
8 16:38 1985 resources/misc.h Page 1
 #define MISCNAME "misc.resource"
 #define MR_ALLOCHISCRESOURCE #define MR_FREEMISCRESOURCE
 "exec/libraries.h"
 IRESOURCES_MISC_H
 MR_SERIALPORT
MR_SERIALBITS
MR_PARALLELPORT
 HILLINGE EXECLIBRARIES H
 MR PARALLELBITS
 "exec/types.h"
 Resource structures
 #1fndef EXEC_TYPES_H
 #define NUMBRIYPES
 SOURCE CONTROL
 $Locker:
 Include
 tinclude
 define
 define
 define
 define
 #end1f
 end1f
 end1f
 8
```

```
(LIB_BASE - 3*LIB_VECTSIZE)
(LIB_BASE - 4*LIB_VECTSIZE)
 (DR_CIVEUNIT)
 (0x00000000)
(0x5555555)
(0xFFFFFFF)
resources/disk.h Page
 #end1f RESOURCES_DISK_H
 DR_CIVEUNIT
DR_CETUNITID
 #define DRT_AMIGA
#define DRT_37422D2S
#define DRT_EMPTY
 DR LASTOOM
 drive types
8 16:38 1985
 #define
 #define
 #define
 1113
1116
1116
1117
1118
1120
1121
1121
1122
1123
1124
1126
1127
1128
 8
```

| Dec 8 16:38 1985 workbench/lcon.h Page                        | con.h Page 1                                                            |
|---------------------------------------------------------------|-------------------------------------------------------------------------|
| 1<br>2 #1fndef LIBRARIES_ICON_H<br>3 #define LIBRARIES_ICON_H | <b>#</b> , #,                                                           |
| •                                                             | /*************************************                                  |
| '                                                             | /* 100n.h                                                               |
|                                                               | ***************************************                                 |
| * icon.h                                                      | external declarations for workbench support library                     |
| 8                                                             |                                                                         |
| # \$Header: icon.h,v                                          | 31.1 85/08/31 09:10:56 neil Exp \$                                      |
| 18 * \$Locker: \$                                             |                                                                         |
|                                                               | *                                                                       |
| 22                                                            |                                                                         |
| `                                                             |                                                                         |
| 25 * library structures                                       |                                                                         |
|                                                               |                                                                         |
|                                                               |                                                                         |
| 29 #define ICONNAME "icon.library"                            | .llbrary"                                                               |
| 31 /4044444444444444444                                       |                                                                         |
| •                                                             |                                                                         |
| 34 * function types                                           |                                                                         |
|                                                               |                                                                         |
|                                                               |                                                                         |
| 38 struct WBObject *CetWBOR                                   | WBObject "GetWBObject(); #AllocwBObject();                              |
| Void                                                          | uticon(), ueticon(), Matchioolvalue();<br>FreeMPObject() AddFree[:et(). |
| char                                                          |                                                                         |
| 44 #endif  LIERARIES_ICON_H                                   |                                                                         |
|                                                               |                                                                         |
|                                                               |                                                                         |
|                                                               |                                                                         |

```
#1fndef INTUITION_INTUITION_H
 Commodore-Amiga, Inc.
 #include "exec/tasks.h"
#endif !EXEC_TASKS_H
 #include "exec/types.h"
#endif !EXEC_TYPES_H
 #include "exec/lists.h"
 #include "exec/nodes.h"
 #1fndef EXEC_LISTS_H
 #1fndef EXEC_NODES_H
 Hendif !EXEC_NODES_H
 struct NewWindow
 endif !EXEC_LISTS_H
 #1fndef EXEC_TASKS_H
 #1fndef EXEC_TYPES_H
 struct DrawerData {
 WBCARBACE
WBDEVICE
 WEDISK
WEDRAMER
WETCOL
 WEPROJECT
 Gadget
Gadget
Gadget
Image
 Gadget
 MBKICK
 workbench.h
 $Locker:
 struct
 struct
 struct
 struct
 struct
 struct
 struct
 IONG
IONG
 IONG
IONG
 200
 define
 define
 define
 define
 define
 define
 define
 /* a standard message structure */
/* the process descriptor for you */
* a descriptor for your code */
/* the number of elements in Arglist */
/* description of window */
/* the arguments themselves */
 /* a lock descriptor */
/* a string relative to that lock */
 a standard message structure */
 /* NOTE: This file is NOT used to generate lib/Astartup.obj or */
/* lib/Lstartup.obj. */
 Commodore-Amiga, Inc.
8 16:39 1985 worldench/startup.h Page 1
 sm_Numbrgs;
sm_ToolWindow;
 sm_Message;
sm_Process;
 sm Argilst;
 an Segment;
 wa_Lock;
 wa Name;
 #include "libraries/dos.h"
#endif !LIBRARIES_DOS_H
 #1fndef LIBRARIES_DOS_H
 #include "exec/types.h" #endif !EXEC_TYPES_H
 #include "exec/ports.h"
#endif !EXEC_PORTS_H
 struct Message
struct MsgPort *
 #1fndef EXEC_TYPES_H
 Indef EXEC PORTS H
 struct WBStartup {
 struct MBArg
 struct WBArg {
 BYTE *
 char
 LONG
 RP TR
 ä
 200
```

```
smallest x coordinate in window * smallest y coordinate in window */ largest x coordinate in window */ largest y coordinate in window */
 current x coordinate of origin current y coordinate of origin
 args to open window */
 $Header: workbench.h,v 31.4 85/10/27 13:50:28 meil Exp $
8 16:39 1985 workbench/workbench.h Page 1
 dd HorizScroll
 dd_VertScroll;
dd_UpMove;
dd_DownMove;
 dd_LeftMove;
dd_RightMove;
 dd_Horizimage
 dd_CurrentX;
 dd_NewWindow;
 dd MaxX;
 #include "intuition/intuition.h" #endif !!NTUITION_Hendif !!NTUITION_H
 dd_MlnX;
 dd MaxY
```

```
/* if this is a drawer or disk'
/* each object's icon lives here
/* virtual X in drawer */
/* virtual Y in drawer */
/* the types for this tool */
/* NOT a pointer, but an instance */
/* NOT a pointer, but an instance */
 1d to encode some special information */
0 /* a normal workbench object */
1 /* the horizontal scroll gadget for a drawer
2 /* the vertical scroll gadget for a drawer
3 /* move one window left */
4 /* move one window up */
5 /* move one window up */
6 /* move one window down */
7 * the name field for an object */
 /* how much stack to give to the /* if this tool is in the backer
 / character string for tool's
 /* each message that comes into the WorkBenchPort must have a type field * in the preceeding short. These are the defines for this type
 /* this object's textual name
/* where to put the name */
 of a gadget structure */
/* this objects free list */
 /* worldbench does different complement modes for its gadgets.

* It supports separate images, complement mode, and backfill mode.

* The first two are identical to intuitions GNDCIMACE and CADCHOME.

* backfill is similar to CADCHOME, but the region outside of the image (which normally would be color three when complemented)
 dos telling us of a disk change */
 #define IMAlloc(size, type) ((type)MAlloc(size))
#define ObjAlloc(obj, size, type) ((type)OAlloc(obj, size))
#define STREQ(a, b) (istromp(a, b))
 /* a "standard Potion" message */
/* exit message from our tools */
/* dos telling us of a disk change '/
/* we got a timer tick */
/* cunimplemented> */
/* cunimplemented> */
 /* wobutw
 object 1/
 Wo NameXOffset;
 We DefaultTool:
 Wo NameYOffset;
 wo_DrawerData;
 wo_ToolWindow:
 workbench/workbench.h Page
 to_StackSize;
 Wo_ToolTypes
 w FreeList;
 Wo_CurrentX;
 Wo_CurrentY;
 wo_IconWin;
 wo_Gadget;
 0×0001
 Fo Lock;
 * is flood-filled to color zero.
 fleld
 HOSELING MIYPE DISKCHANCE
 /* we use the gadget id idefine GID_WBOBJECT
 Medine MIYPE_TIMER
Medine MIYPE_CLOSEDOWN
 #define GID_HORIZSCROLL
 define GID_RETSCROLL Heefine GID_RICHTSCROLL
 define MIYPE_TOOLEXIT
 *define GID_VERTSCROLL
 #define GID_DOWNSCROLL #define GID_NAME
 struct DrawerData
 define MTYPE_IOPROC
 Idefine GID_UPSCROLL
 define CADCBACKFILL
 struct Window *
 struct FreeList
 Idefine MTYPE PSTD
 struct Gadget
 *
 char *
 char *
 8 16:39 1985
 SHORT
 IONC
IONC
 char
 ።
 121
123
123
124
125
126
127
128
130
133
134
135
 80
 do_Magic; /* a magic number at the start of the file*/
do_Version; /* a version number, so we can change it*/
do_Gadget; /* a copy of in core gadget */
 /* a magic number, not easily impersonated */
/* our current version number */
 /* icon is currently in a window */
/* we're a drawer, and it is open */
/* our icon is selected */
/* set if icon is in background */
 /* what flavor object is this? */
/* number of references to this
 /* pointer to drawers window */
/* back pointer to drawer object '/
/* where our children hang out */
 wo_MasterNode: /* all objects are on this list */
wo_Siblings: /* list of drawer members */
wo_SelectNode: /* list of all selected objects */
wo_UtilityNode: /* function specific linkages */
 /* the amount of DrawerData actually written to disk */
#define DRAWERDATAFILESIZE (sizeof(struct NawWindow) + 2*sizeof(LONG))
 /* only applies to tools */
/* only applies to tools */
 full system V compatible (yet) ... */
 wo_DrawerOpen:1;
wo_Selected:1;
 Ho_Background:1;
 do_DefaultTool;
8 16:39 1985 worldench/worldench.h Page
 dd_VertProp;
dd_DrawerWin;
 do_DrawerData;
do_ToolWindow;
 wo_IconDisp:1;
 dd_HorizProp;
 dd_Object;
dd_Children;
 dd_VertImage;
 do_ToolTypes;
 do_StackSize;
 do_CurrentX;
 do_CurrentY
 wo_Type;
wo_UseCount;
 fl_NumEree;
 fl_MenList;
 Wo_Parent;
 dd Lock;
 wo Flags;
 #define WB_DISKNERSION 1
 -
 Propinfo
Window *
WBObject *
List
 struct DrawerData
 g
 Propinfo
 /* object flags
#ifdef SWARTCOMPILER
 struct WBObject
 struct DiskObject
 struct Gadget
UBYTE
 /* lattice is
 Image
 struct FreeList {
 struct List
 struct MBObject
 struct Node
 struct Node
 Node
 struct Node
 struct 1
 char **
 struct
 struct
 struct
 struct
 struct
 char t
 char *
 struct
 GMORD
 USHORT
 UBYTE
 UBYTE
 UBYTE
 end1f
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```

| /* if an icon does not really live anywhere, set its current position * to here */ */ #define NO_ICON_POSITION (0x80000000) |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------|--|--|--|
| 169 /* 1f an 1con de<br>170 * to here<br>171 */<br>172 #define NO_ICON                                                      |  |  |  |

## Appendix E

# Assembly Include Files—".i" Files

This appendix contains the assembly language include files that define the system data structures used by the ROM (or kickstart) routines and the disk-loadable libraries.

As with the documentation files, these include-files are organized on a functional basis. In other words, things pertinent to the exec are listed under "exec/something.i", things pertinent to graphics are listed under "graphics/graphicsitem.i" and so on.

This appendix is a hard-copy of the "SYS:includes" directory on the Amiga Macro Assembler disk.

```
Cross Reference Utility (C) 1984, 1985 Commodore-Amiga, Inc.
 1:dictionary 2:ables i 3:addbits i 4:alerts i 5:audio i
6:blit. 7:bootblock i 8:cia i 9:ciabase i 10:clip.
11:clipboard i 12:console i 13:copper i 14:custom i 15:devices i
16:disk i 17:diskfont i 19:display i 19:dasbits i 20:dos i
12:dos_lib.i 22:dosettems i 23:erros i 24:exec i 25:exec_lib i
13:gfabase i 32:dos i 37:inticalizers i 34:input i 35:input event i
16:disbits i 37:interrupts i 36:intuition i 39:intuitionbase i 40:io i
14:lonyboard i 42:exymap i 43:layers i 44:libraries i 45:lists i
15:ports i 52:potgo i 53:printer i 54:pribase i 55:rastport i
15:strings i 62:tasks i 63:taxt i 64:timer i 65:trackdisk i
15:consolator i 66:translator i 69:workbench i
ABRE-Lang-Include-Iref Page 2

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ADKF_USE2P3, 3-41
ADKF_USE2Y3, 3-45
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ADKF_USE2Y3, 3-44
ADKF_USE2Y3, 3-44
ADKF_USE2Y3, 3-44
ADKF_USE2Y3, 3-45
ADKF_USE2Y3, 3-46
ADKF_USE2Y3, 3-46
ADKF_USE2Y3, 3-47
ADKF_USE2Y3, 3-46
ADKF_USE2Y3, 3-46
ADKF_USE2Y3, 3-47
ADKF_USE2Y3, 3-48
ADKF_USE2Y3, 3-47
ADKF_USE2Y3, 3-47
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ADKF_USE2Y3, 3-47
ADKF_USE2Y3, 3-47
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ADKF_USE2Y3, 3-47
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ADKF_USE2Y3, 3-48
ADKF_USE2Y3, 3-49
ADKF_USE2Y3
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CLEANNE, 6-15
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CLEANNE, 6-16
CLEANNE, 6-16
CLEANNE, 6-16
CLEANNE, 6-16
CLEANNE, 6-17
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CHECKIT,
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```
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Chebase,
Copina,
Chebase,
Copina,
Chebase,
Copina,
Chebase,
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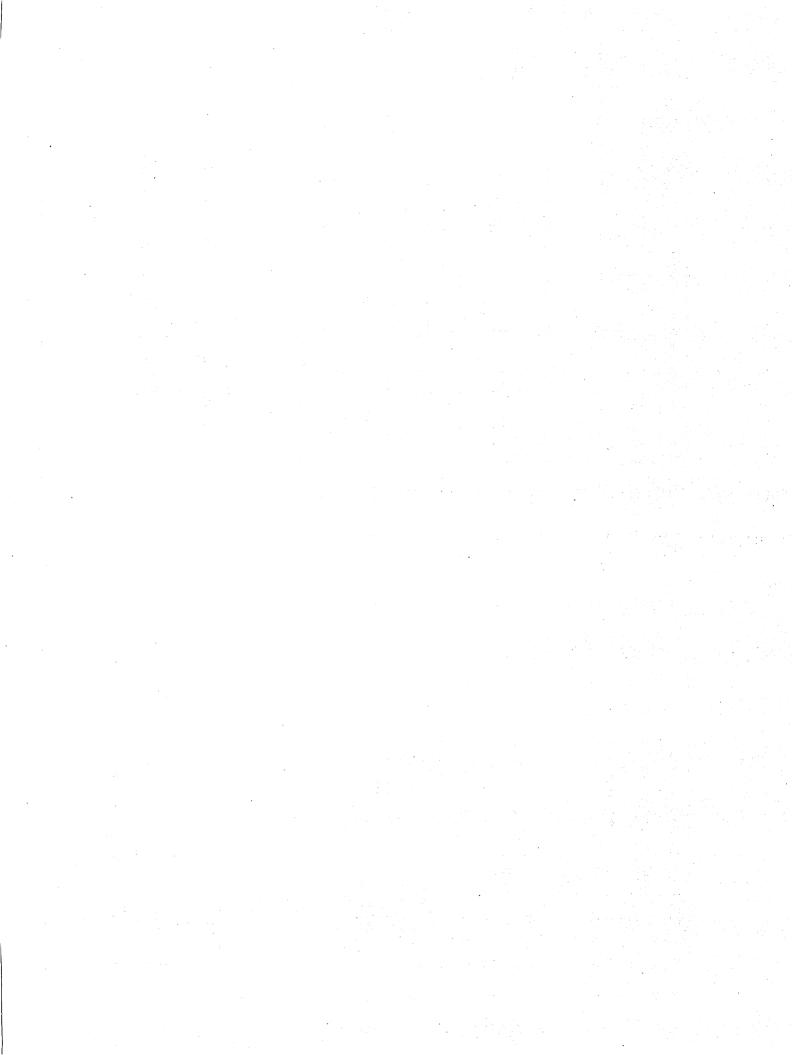
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| Page 1  10_1  1 | 1. Page 1.  DIO_I  1. ***********************************                                                                           | 9e 1  1  1  1  1  2e  2e  7  2.0  2.0  2.0  2.0  2.0  2.0  2.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Dec 8 16:41 1985 devices/bootblock.i Page 1 | 1 ************************************            | 7 * Source Control<br>8 *<br>9 *<br>10 * \$Header: bootblock.1,v 27.1 85/06/24 13:15:16 neil Exp \$ | * * * * | * * * *    | * Added BBNAME definitions  * Revision 26.1 85/06/17 20:08:25  * *** empty log message *** | •••                                                 | 28 29 STRUCTURE BB.0 30 STRUCT BB_ID,4 * 4 character identifier 31 LONG BB_CHKSUM * boot block checksum (balance) 32 LONG BB_DOSBLOCK * reserved for DOS patch 33 LABEL BB_ENTRY * bootstrap entry point 34 LABEL BB_SIZE | BOOTSECTS equ   | 40 endm 41 41 BBID_KICK macro * firmware image disk 43 dc.b 'KICK' | 44 endm<br>45<br>46<br>47 BBNANE_DOS EQU (('D'<<24)!('O'<<16)!('S'<<8))<br>48 BBNANE_XICK EQU (('K'<<24)!('I'<<16)!('C'<<8)!('K')) |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------|---------|------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
|                 | s/audio.1  Sstandio.1  SET  SET  SET  SET  SET  SET  SEC  SEC | IFND DEVICES AUE AUDIO_I SET AUDIO_I SET Commodore- audio_1 IFND EXEC_IO_I INCLUDE "exec/10 ENDC E MACRO DC.B 'audio.devi ENDM MINPREC EQU MAXPREC IOMADIO-KAP IOMADATA IOMADA |                                             | olo_I<br>1<br>14111111111111111111111111111111111 | #F                                                                                                  | 0,'0    | 4<br>-1.28 | 127<br>CAD_NONSTD+0<br>CAD_NONSTD+1                                                        | CPD_NONSTD+2 CPD_NONSTD+3 CPD_NONSTD+4 CPD_NONSTD+5 | 1<>5 ADCMDE_NOUNIT+0 4 1<<4 5 5 1<<5                                                                                                                                                                                      | 1<6<br>7<br>1<7 | -10<br>-11<br>-12                                                  | 31.ZE                                                                                                                              |

8

```
Dec 8 16:41 1985 devices/clipboard.i Page 2

57 PRIMARY_CLIP EQU 0 ; primary clip unit
58 STRUCTURE SatisfyMeg 0

50 STRUCTURE SatisfyMeg 0

50 STRUCTURE SatisfyMeg 1

51 LONG SatisfyMeg_SIZEOR

52 LONG SatisfyMeg_SIZEOR

53 LABEL satisfyMeg_SIZEOR

54 ENDC
```

```
number of bytes transferred number of bytes requested either clip stream or post port offset in clip stream ordinal clip identifier
 ; device node pointer; unit (driver private); device command; including QUICK and SATISEY; error or warning num
 ULONG cu_UnitNum; ; unit number for this unit; the remaining unit data is private to the device
 ; list of units
 clipboard device command definitions
8 16:41 1985 devices/clipboard.1 Page 1
 Commodore-Amiga, Inc.
 STRUCTURE ClipbcardUnitPartial,0
STRUCT cu_Node,LN_SIZE; ;
ULONG cu_UnitNum; ; uni
 CBD_CURRENTREADID
CBD_CURRENTWRITEID
 IOC11pReq,0
to_Message,MN_SIZE
to_Device ;
 EXEC_PORTS_I
"exec/ports.1"
 "exec/nodes.1"
 "exec/lists.1"
 EXEC_10_1
"exec/10.1"
 10_Length
10_Data
10_Offset
10_C11pID
10cr_SIZEOF
 EXEC_NODES_I
 EXEC_LISTS_I
 to_Command
 to Error
 CBERR OBSOLETEID EQU
 to_Unit
 STRUCTURE
STRUCT
APTR
APTR
UMORD
UBYTE
BYTE
ULONG
ULONG
LONG
LONG
LONG
LONG
LONG
LONG
 INCLUDE
ENDC
IFND
INCLUDE
ENDC
 DEVINIT
 DEVOND
 NCLUDE
 DEVCAD
 IFND
 ENDC
 ENDC
 80
```

```
names refer to the implementation, they are the preferred
 ; linefeed newline mode
 for use with the Amiga console device.
 ; auto scroll mode
 ; auto wrap mode
8 16:41 1985 devices/console.1 Page 2
 SM and RM parameters
 20
 DSR parameters
 CTC parameters
 ***** TBC parameters
 200
 MACRO
DC.B '>1'
ENDM
 MACRO
DC.B '77'
ENDM
 TBC_HCIRTABSALL
 CIC HCIRIAB
CIC HCIRIABSALL
 SCR_DEFAULTEC
 SCR. CLROBC
SCR. CLR1BC
SCR. CLR2BC
SCR. CLR3BC
SCR. CLR3BC
SCR. CLR5BC
SCR. CLR5BC
SCR. CLR6BC
SCR. CLR6BC
 CTC_HSETTAB
 TBC HCLRTAB
 SCR CIRI

 DSR COR

 ENDC

 N CENT
 8
```

```
DEVICES_CONSOLE_I SET 1
 the ANSI standard, not the implementation
 $Header: console.i,v 1.4 85/11/13 15:13:21 kodiak Exp $
 Console device command definitions
 Commodore-Amiga, Inc.
devices/console.i Page 1
 ****** Console commands ******
 CD_ASKKEYMAP
CD_SETKEYMAP
 IFND DEVICES CONSOLE 1
 5444444
 console.1
 NCLUDE "exec/10.1"
 t
 ****** SCR parameters
 refer
 Source Control
 FIND EXEC TO I
 $Locker: $
 SCR BOLD
SCR_ITALIC
SCR_UNDERSCORE
SCR_NEGATIVE
 these names
 SCR. BLACKBC
SCR. REDBC
SCR. CREENBC
SCR. YELLOWBC
SCR. MACENTABC
SCR. CYANBC
SCR. CYANBC
 SCR. BLACK
SCR. RED
SCR. CREEN
SCR. YELLOW
SCR. YELLOW
SCR. WACENTA
SCR. CYAN
 SCR. PRIMARY
Dec 8 16:41 1985
 SCR_DREAULT
 DEVINIT
 DEVOAD
```

| IEND DEVICES_INPUT_I   SET 1   Commodore-Amiga, Inc.   Commodore-Amiga, Inc.   Input device command definitions   Input device command definitions   IEND ENCA_IO_I   IND_ADMANDER   IND |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| 50 CPDERR SELCTIFIE EQU 1 ; UNIS CONTROLISE NOU VALLU AL ULLE LAMB 51 ENDC |
|----------------------------------------------------------------------------|
|                                                                            |

select button released over the same Cadget (address in ie\_EventAddress See Codes REQCLEAR and REQSET \* select button pressed down over a Gadget (address in ie\_EventAddress) DEVICES\_INPUTEVENT\_I SET I 1e\_EventAddress needs to be refreshed transmission (Menu number is in ie\_Code) active Window's Close Gadget \* A raw mouse report from the game port device IECLASS\_RAW#CUSE EQU \$02 made active has taken place. \* the window is about to be made inactive IECLASS\_INACTIVEWINDOW EQU \$12 ECLASS\_NUIL EQU \$00 A raw keycode from the keyboard device devices/imputevent.i Page 1 \*----- constants ------Commodore-Amiga, Inc. \$03 \$04 \$06 \$08 \$09 \$0**A** \$0D \$01 \$11 \$0B \$0C \$0E the window is about to be been EQU \$07 new preferences are available DEVICES\_INPUTEVENT\_I "devices/timer.i" this Window has a new size --- ImputEvent.1e\_Class the disk has been inserted S S 졊 졄 S 贸 젎 ECLASS\_NEWPREFS EQU the disk has been removed \* A Pointer Position report imput event definitions \* some Requester activity IECLASS\_REQUESTER EQ A private console event DEVICES\_TIMER\_I this is a Menu Number User has selected the the Window pointed to TECLASS REFRESHMINDOW IECLASS\_ACTIVEWINDOW ECLASS DISKINSERTED A NOP Input event FCLASS\_CLOSEMINDOW TECLASS\_DISKREMOVED IECLASS POINTERPOS IECLASS\_SIZEWINDOW IECLASS CADCETDOMN IECLASS CADCETUP FCLASS MENULIST IECLASS NEWPREFS \* A timer event ECLASS RAMKEY ECLASS EVENT IECLASS\_TIMER ECLASS NULL 8 16:41 1985 INCLUDE IFND IEND **B**C - E-5

```
$01
the last Requester clears out of the Window
$00
 REQSET is broadcast when the first Requester (not subsequent ones) ope
 ; active input window changed
 also uses IECODE_UP_PREFIX
 $0001
 $0005
 $0004
 $0008
 $0010
 30020
 30040
 $0080
 $01
 $80
$77
$78
$78
 $68
$69
$6A
$FF
 $12
 * --- ImputEvent.ie_Qualifier
IEQUALIFIER_LSHIFT EQU %
IEQUALIFIER_LSHIFT EQU 0
 EQU
when
 202
 g
 222222
 2222222222
 22222
 ૱૱૱૱૱૱૱૱૱૱૱૱૱
 --- ImputEvent.1e_Code
 IECLASS REQUESTER Codes
 * REQCLEAR is broadcast
IECODE_REQCLEAR
 (EQUALIFIERB RALT
TEQUALIFIER LOCHMAND
TEQUALIFIERB LOCHMAND
TEQUALIFIER ROCHMAND
 IEČUALIFIERB RSHIFT
IEČUALIFIER CAPSLOCK
IEČUALIFIERB CAPSLOCK
IEČUALIFIERR CONTROL
 ECODE_COMM_CODE_FIRST
 IECODE_KEY_CODE FIRST
 IECODE_COMP(CODE_LAST
 ECODE KEY CODE LAST
 EQUALIFIERB CONTROL
EQUALIFIER LALT
 ECODE LATINI FIRST
 IECLASS RAMMOUSE
 ECODE ASCII FIRST
 ECODE LATINI LAST
 RECODER UP PREFIX
 ECODE ASCII LAST
 EQUALIFIERB LALT
 IECLASS RAMKEY
* the last class
 RCODE UP PREFIX
 * IECLASS_EVENT
 ECODE_NEWACTIVE
 EQUALIFIER RALT
 ECODE ASCII DEL
 ECODE CO FIRST
 ECODE_CL_FIRST
 in the Window
 * IECLASS ANSI
 I ECODE NOBULTION
 ECODE_C0_LAST
 ECODE C1 LAST
 ECODE_RBUTTON
 ECODE MBUTTON
 ECODE LBUTTON
 ECODE RECSET
 IECLASS MAX
```

devices/imputevent.i Page

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| IFND DEVICES_KEYBOARD_I  DEVICES_KEYBOARD_I  *********************************** | * Keyboard device command definitions |                                                    |                                                                                                       |       |  |  |
|----------------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------|--|--|
| * * * *                                                                          | ***                                   |                                                    |                                                                                                       |       |  |  |
| 4 4 4<br>4 4 4<br>4 4 4                                                          |                                       |                                                    |                                                                                                       |       |  |  |
|                                                                                  | *                                     |                                                    |                                                                                                       |       |  |  |
| 4 4 4                                                                            | 4                                     |                                                    |                                                                                                       |       |  |  |
| # # # # # # # # # # # # # # # # # # #                                            | lons                                  |                                                    | Z k k                                                                                                 |       |  |  |
| 4 6 6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4                                          | finit                                 |                                                    | X<br>ANDLE<br>ANDLE<br>(LERDO                                                                         |       |  |  |
| : KEYBOARD_I<br>                                                                 | Keyboard device command definitions   | # <b>#</b>                                         | KBD_READEVENT<br>KBD_READMATRIX<br>KBD_ADDRESETHANDLER<br>KBD_REMRESETHANDLER<br>KBD_RESETHANDLERDONE |       |  |  |
| DEVICES_KEYBOARD_I<br>EYBOARD_I SET<br>************************************      | Comma                                 | EXEC_10_1<br>"exec/10.1"                           | LEAD<br>ADDR<br>LEER                                                                                  |       |  |  |
| ES_KE<br>RD_I<br>*****<br>Com<br>key                                             | vice                                  | EC_10<br>*exe                                      | 8 8 8 8 8<br>8 8 8 8 8 8                                                                              |       |  |  |
| EVIC<br>SYBOA                                                                    | g t                                   |                                                    |                                                                                                       |       |  |  |
| IEND I                                                                           | ayboan                                | IEND<br>INCLUDE<br>ENDC<br>DEVINIT                 | DEVCIO<br>DEVCIO<br>DEVCIO<br>DEVCIO<br>DEVCIO                                                        | ENDC  |  |  |
| DEVIC                                                                            | ¥                                     |                                                    | 88888                                                                                                 | 딦     |  |  |
| 106459                                                                           | 11989                                 | 12 13 12 14 17 17 17 17 17 17 17 17 17 17 17 17 17 | 22 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3                                                                | 25 25 |  |  |
|                                                                                  |                                       |                                                    |                                                                                                       |       |  |  |

| 8 16:41 1985 devices/imput |         |  |
|----------------------------|---------|--|
| De<br>De                   | - E-6 - |  |

| Mm_HiCapsable |
|---------------|
|---------------|

Dec

| 16:41 1985  *********************************** |
|-------------------------------------------------|
|-------------------------------------------------|

:

```
8 16:41 1985 devices/parallel.i Page 3
 ULONG
APTR
ULONG
 ULONC
UBYTE
UBYTE
STRUCT
LABEL
 ENDC
 ဓ
 482
 1113
1114
1115
1116
1119
1120
1121
1121
1124
1125
 D
 This
 * IOEXTPAR-sized structure or you may overlay innocent memory, okay ?!
 CAUTION !!! IF YOU ACCESS the parallel.device, you MUST (!!!!) use
 rgst-qued-or-current bit
IO_STATUS read=0, write=1
 *-- PARALLEINAME is a generic macro to get the name of the driver.
*-- way if the name is ever changed you will pick up the change
 printer in busy toggle
 (not yet implemented)
EOF mode enabled bit
 ; PARFLACS non-exclusive access
 rqst-aborted bit
 printer selected
 rqst-queued bit
 paper out
 IO FLACS
 E
devices/parallel.i Page 2
 PTERMARRAY_0
PTERMARRAY_1
PTERMARRAY_SIZE
 PAR, SHARED, 5
PAR, RAD, BOOGIE, 3
PAR, EGENODE, 1
IOPAR, QUEUED, 6
IOPAR, ABORT, 5
IOPAR, ACTIVE, 4
 MACRO
'parallel.device'
 IOPT, RMDIR, 3
IOPT, PBUSY, 2
IOPT, PAPEROUT, 1
IOPT, PSEL, 0
 *-- internalName: PARALLELNAME
 STRUCTURE IOEXTPAR, IOSTD_SIZE
 JESTICE
10 DEVICE
10 COMMAND
10 FIACS
10 FRECE
10 FRECE
10 ACTUAL
 ReplyPort
MNLength
 *-- Normal usage would be:
 STRUCTURE PTERMARRAY, 0
 Name
 IOExt
 *-- automatically.
 STRUCT
APTR
APTR
UMORD
UBYTE
 PARALLELNAME:
STRINC
 ULONG
ULONG
LABEL
 UBYTE
APTR
APTR
UMORD
 APTR
UBYTE
 BITDEE
BITDEE
BITDEE
BITDEE
BITDEE
BITDEE
BITDEE
BITDEE
 ENDM
8 16:41 1985
 Dec
Dec
```

|                                     |                                                                                                                                                                                                                                                           | (sort of)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | (special)                                                                        |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
|                                     |                                                                                                                                                                                                                                                           | 1100 DEC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                  |
| 16:41 1985 devices/printer.1 Page 2 | ASHORPO EQU 14; ESC[Ow normal pitch aSHORP2 EQU 15; ESC[Aw elite on aSHORP1 EQU 16; ESC[Aw elite off aSHORP4 EQU 17; ESC[Aw condensed fine on aSHORP3 EQU 17; ESC[Aw condensed off aSHORP6 EQU 19; ESC[Sw enlarged on aSHORP5 EQU 20; ESC[Sw enlarged off | aDENG EQU 21; ESC[6"z shadow print on aDENA EQU 22; ESC[5"z shadow print off aDENA EQU 23; ESC[5"z shadow print off aDENA EQU 23; ESC[4"z doublestrike on aDENA EQU 24; ESC[3"z doublestrike off aDENA EQU 25; ESC[2"z NLQ on aBENI2 EQU 26; ESC[1"z NLQ on aSUS1 EQU 28; ESC[1"z NLQ on aSUS1 EQU 28; ESC[1"x NLQ on aSUS1 EQU 29; ESC[4w subscript off aSUS3 EQU 30; ESC[4w charalize the line april EQU 33; ESC[6w normalize the line april EQU 34; ESC(6w normalize the line asknown EQU 35; ESC(7w normalize the line asknown EQU 36; ESC(8w chara set asknown EQU 36; ESC(1 Sweden char set asknown EQU 36; ESC(1 Sweden char set asknown EQU 40; ESC(2 Spanish char set asknown EQU 41; ESC(2 Spanish char set asknown EQU 42; ESC(2 Danish II char set asknown EQU 43; ESC(6w norwalgn char set asknown EQU 44; ESC(C Danish II char set                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 210 22024                                                                        |
| 16:4                                |                                                                                                                                                                                                                                                           | adens<br>adens<br>adens<br>adens<br>adens<br>asus<br>asus<br>asus<br>apu<br>apu<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>aento<br>ae<br>aento<br>ae<br>aento<br>ae<br>aento<br>ae<br>aento<br>ae<br>aento<br>ae<br>a | _                                                                                |
| Dec 8                               | 75 85 85 85 85 85 85 85 85 85 85 85 85 85                                                                                                                                                                                                                 | 65<br>65<br>65<br>65<br>65<br>65<br>65<br>65<br>65<br>65<br>65<br>65<br>65<br>6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 92<br>93<br>93<br>93<br>93<br>93<br>93<br>93<br>93<br>93<br>93<br>93<br>93<br>93 |

| IFND DEVICES PRINTER I  DEVICES PRINTER I EQU I I I I I I I I I I I I I I I I I I I | printer device command definitions  Source Control  \$Header: printer.1,v 1.2 85/10/09 16:16:27 kodiak Exp \$ | IFND EXEC_NODES_I INCLUDE "exec/nodes.1" ENDC IFND EXEC_LISTS_I INCLUDE "exec/lists.1" ENDC ENDC | EXEC_PORTS_I DE "exec/ports.1"  EXEC_IO_I DE "exec/io.1"  NIT | HD PRD_RAWMRITE HD PRD_DUMFRFORT PFINTED DUMFRFORT PFINTER definition EQU 0 : ESCC EQU 1 : ESC#1 | 2; ESCD 1f 3; ESCE return,1f 4; ESCM reverse 1f 5; ESC[0m normal char set 6; ESC[3m italics on 7; ESC[23m italics off 8; ESC[4m underline on | ESC [45m boldface on<br>ESC [22m boldface of<br>ESC [22m boldface off<br>SCR30-39 set foreground color<br>SCR40-49 set background color |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| BS devices DEVICES P PRINTER I CO CO Pr                                             | rinter device Source Control SHeader: print                                                                   | EXEC_NODE  UDE "exec, EXEC_LIST  UDE "exec,                                                      | EXE DE EXE                                                    | O PRD                                                        |                                                                                                                                              |                                                                                                                                         |
| 16:41 1985 IFND   DEVICES P                                                         | Sour She state                                                                                                | IFND EZ<br>INCLUDE<br>ENDC<br>IFND EZ<br>INCLUDE<br>ENDC                                         | IFND E INCLUDE ENDC IFND E INCLUDE ENDC ENDC ENDC             | DEVCHO<br>DEVCHO<br>DEVCHO<br>;****** p                                                          | aIND<br>aNEL<br>aRI<br>aSGR0<br>aSGR3<br>aSGR23<br>aSGR23                                                                                    | aSCR24<br>aSCR1<br>aSCR22<br>aSFC                                                                                                       |
| Dec 8 1 2 2 3 4 4 4 5 5 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6                               | 8 6 0 11 2 E 4 5 1                                                                                            | 22 2 2 2 2 2 3 4 2 4 2 4 2 4 2 4 2 4 2 4                                                         | 33 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3                        | 36<br>37<br>37<br>44<br>44<br>45<br>33                                                           | 44 44 44 68 68 68 68 68 68 68 68 68 68 68 68 68                                                                                              | 8 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5                                                                                                 |

```
DestCols is fraction of FULLCOLS
DestRows is fraction of FULLROWS
 make DestRows maximum possible
 make DestCols maximum possible
 printer cannot output graphics cannot invert hold & modify print
 DestRows specified in 1/1000"
 DestCols specified in 1/1000"
 no memory for internal variables
 user canceled a printer timeout
 ensure correct aspect ratio
 print dimensions illegal print dimensions too large
 masks out density bits
 graphics viewport modes
 second command parameter
 fourth command parameter
 id : printer command
; first command parameter
 third command parameter
 destination x width destination y height
 ESCH Set horiz tab
ESCJ Set vertical tabs
ESC[09 Clr horiz tab
ESC[19 Clr vertical tabs
ESC[19 Clr vertical tabs
ESC[49 Clr vartical tabs
ESC[49 Clr all v tabs
ESC[46 Clr all v tabs
ESC[45 Set default tabs
ESC[45 Set default tabs
 Bottom marg set
11;Pn2r T&B margins
11;Pn2s L&R margin
 highest res
 source x origin
 lowest res
 source y origin
source x width
 source x height
 next res
 next res
 Clear margins
 option flags
 raster port
 color map
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 ESC#2 Bottom
ESC[Pn1;Pn2r
ESC[Pn1;Pn2s
ESC#3 Clear m
 $04
$04
$04
$04
$10
$20
$100
$100
$300
$400
 STRUCTURE IOP-tCmdReq, IO_SIZE
 CODRPReq, IO_SIZE
 to PrtCommand
 PDERR_CANCEL EQU
PDERR_MOTRAPHICS EQU
PDERR_INVERTHAM EQU
PDERR_BADDINENSION EQU
PDERR_DIMENSIONOVELOM EQU
PDERR_LINTERNALMEMORY EQU
 io_Special
iodrpr_SIZEOF
 1oper_SIZEOF
 10_SrcY
10_SrcWidth
 lo_SrcHeight
 io RastPort
 lo_ColorMap
 io_DestCols
 to_DestRows
 io Parmi
io Parmi
io Parmi
 to_Parm0
 io_Modes
 SPECIAL MILROWS
SPECIAL FULLOOLS
SPECIAL FULLOONS
SPECIAL FRACOLS
SPECIAL ASPECT
SPECIAL ASPECT
SPECIAL DENSITY
SPECIAL DENSITY
SPECIAL DENSITY
SPECIAL DENSITY
SPECIAL DENSITY
SPECIAL DENSITY
 lo_SrcX
 65
65
65
 SPECIAL MILCOLS
 22222222222
 STRUCTURE
 UBYTE
UBYTE
UBYTE
UBYTE
LABEL
 APTR
APTR
ULONG
UMORD
UMORD
UMORD
UMORD
LONG
LONG
UMORD
 aTBSALL
aEXTEND
 aVIS
aTBC3
aTBC1
aTBC1
aTBC4
aTBC4
 aBMS
aSTBM
aSLRM
aCAM
 EFTS.
 8E1
 80
```

devices/printer.i Page 8 16:41 1985

; no memory for print buffer 7 S PDERR\_BUFFERNEMORY

ENDC

| 8 25 25 25 25 25 25 25 25 25 25 25 25 25 |
|------------------------------------------|
|------------------------------------------|

| 6:41 1985 devices/probase.1 Fage 1  *********************************** | * printer device data definition  *********************************** | IFND EXEC_NODES_I INCLUDE "exec/nodes.1" ENC ENC IFND EXEC_LISTS_I INCLUDE "exec/lists.1" END INCLUDE "exec/lists.1" INCLUDE "exec/ports.1" INCLUDE "exec/ports.1" INCLUDE "exec/lists.1" END ENDC IFND EXEC_LIBRARIES_I INCLUDE "exec/libraries.1" ENDC |                                            | APTR dd Segment APTR dd ExecBase APTR dd Comdbytes APTR dd Comdbytes UWTRD dd NumComnands LABEL dd SIZEOF |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Dec 8 16:41                                                             | • • • • •                                                             |                                                                                                                                                                                                                                                          | 26 11 23 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | 55 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5                                                                    |

| sta,0  printer name, null terminated called after LoadSeg called at the UncadSeg called at OpenDevice called at OpenDevice called at CloseDevice printer class color class number of parint columns available number of character sets printer class number of character sets number of character sets printer of character sets number of character sets number of character sets printer taxt command in a raster dump horizontal dot density printer taxt command table special command handler raster render function good write timeout good write timeout segment version printer extended data printer extended data | arminated Seg seg ns available sets in a raster of m in a raster of table er n |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                |

| * 25                                                          | 113 *    | 30               | TO CTT.CHAR                                 | : cont       | control char's (order = xON, xOFE, rsvd, rsvd) |
|---------------------------------------------------------------|----------|------------------|---------------------------------------------|--------------|------------------------------------------------|
|                                                               | 115      | OLONG            | IO RBUFLEN                                  | : lenc       | length in bytes of serial port's read builes   |
| 55 SERIALINAME: MACKED                                        | 116      | ULONG            | IO EXTELACS                                 | о <u>г</u> ) | (not used) Ilag extension at each              |
|                                                               | 117      |                  | TO BRICTIME                                 | . dur.       | duration of break signal in MICROseconds       |
| #F ====================================                       | 119      | STRUCT           | IO TERMARRAY,                               | TERMARRA     | Y_SIZE ; termination character array           |
|                                                               | 120      | UBYTE            | IO READLEN                                  | ; bit        | IO READLEN ; bits per read char (bit count)    |
| BIIDE SEK, EVENUE, O                                          | 121      | UBYTE            | IO WRITELEN                                 | ; bit        | S per write dia (arc come)                     |
| CRD DAN BOOTIF 4 . "                                          | 122      | UBYTE            | IO_STOPBITS                                 | ors :        | SCOULTS IN 1 car (com.)                        |
| BITDEF SER, OUEUEDBRKK, 3 ; "                                 | 123      | UBYTE            | 10_SERFLANS                                 | sta          | status of serial port, as follows:             |
| BITDEE SER, TWIRE, 2 ; "                                      | 175      |                  | 2011111                                     |              | •                                              |
| SER, PARTY_ODD, 1 ; "                                         | 126      |                  | BIT                                         | ACTIVE       | FUNCTION                                       |
| BITDEE SER, PARTY_ON, 0 ;                                     | 122      |                  | 0                                           | low          | busy                                           |
| BITDEF IOSER, QUEUED, 6 ; IO_FLACS                            | 128      |                  | -                                           |              | paper out                                      |
| BITDEF IOSER, ABORT, 5 ;                                      | 120      | _                | 7                                           | low          | select                                         |
|                                                               | 1 5      |                  | m                                           | low          | Data Set Ready                                 |
| BITDEF IOST, XOFFREAD, 4 ; IOST_HOB receive currently 3       | 757      |                  | 4                                           | _            | Clear To Send                                  |
| BITDEE IOST, XOFFWRITE, 3 ; "                                 | 151      |                  |                                             |              | Carrier Detect                                 |
| BITDEF IOST, READEREAK, 2 ;                                   | 727      |                  | · •                                         |              | Ready To Send                                  |
| BITDEF IOST, WROTEBREAK, 1;                                   | 757      |                  | 7                                           |              | Data Terminal Ready                            |
|                                                               | 100      |                  | · cc                                        | £            | read overrun                                   |
| 4                                                             |          |                  | 6                                           |              | break sent                                     |
|                                                               |          |                  | . 01                                        | H            | break received                                 |
| 81 STRUCTURE TERMARRAY, 0                                     | \c1      |                  | =                                           | FIG.         | transmit x-Offed                               |
|                                                               | 9 5      |                  | 12                                          | High         | receive x-Offed                                |
| ULONG                                                         | 139      |                  | 13-15                                       | (not)        | reserved                                       |
| LABEL                                                         | 140      |                  | 2                                           |              |                                                |
|                                                               | 142      |                  | LABEL IOEXTSER_SIZE                         | RSIZE        |                                                |
|                                                               | 143      |                  |                                             |              |                                                |
| * CAUTION !! IF YOU ACCESS the serial device, you MUSI (!!!!) | 144      | *********        | **********                                  | ********     | 化化氯化甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲甲甲甲甲甲甲甲甲甲甲甲甲甲甲        |
|                                                               | 145      |                  |                                             |              |                                                |
|                                                               | 145      |                  |                                             |              |                                                |
|                                                               | 147      |                  |                                             |              |                                                |
| STRUCTURE IOEXTSER, IOSTD_SIZE                                | 148      | * Driver         | Driver error definitions                    | suo          |                                                |
| 92                                                            | 140      |                  |                                             |              |                                                |
| 93 * STRUCT MsgNode                                           | 150      | #                |                                             |              |                                                |
| 94 * 0 APTR Succ                                              | -        |                  |                                             |              |                                                |
| 95 * 4 APTR Pred                                              | 12:      | Carpur DayBiev   | Biev                                        | EOU          | -                                              |
| •                                                             | 701      | P. 11 100        | Contract Designation                        | EOU          | 2                                              |
| # Q LIBYTE                                                    | 551      | Ser Err De       | -Brind                                      | EOE.         | · 67                                           |
| A APTR                                                        | <u> </u> | Serer Invocate   | Pour                                        | 100E         | 4                                              |
| •                                                             | 61.      | Coup. Tanbaran   | Daron                                       | EOU          | vo.                                            |
| # 12 UNORD                                                    | 9 5      | Cont I work      | - To 10 10 10 10 10 10 10 10 10 10 10 10 10 | FOU          | 9                                              |
| * STRIET IC                                                   | 157      | Seren            | i deci i                                    | 10 E         |                                                |
| A 14 APTR                                                     | 158      | Serent Notupen   | Copen                                       | S S          | · 00                                           |
|                                                               | 159      | SerErr_Portkeset | rtkeset                                     | 3,5          |                                                |
| •                                                             | 160      | SerErr_ParityErr | rityerr                                     |              |                                                |
|                                                               | 161      | SerErr_InitErr   | ItErr                                       |              |                                                |
| TI ODITE                                                      | 162      | SerErr_T1        | merErr                                      |              | 1.                                             |
| IF UBITE                                                      | 163      | SerErr_Bu        | SerErr_BufOverflow                          |              | 77                                             |
| STRUCT                                                        | 164      | SerErr NoDSR     | DSR                                         |              | 13                                             |
| # 20 ULONG                                                    | 1654     | SerErr NoCIS     | CIS                                         |              | 14                                             |
| * 24 ULONG                                                    | 166      | SerErr De        | SerErr DetectedBreak                        | nŏa          | 15                                             |
| * 28 APTR                                                     | 167      |                  |                                             | 1            |                                                |
| •                                                             |          | 2                | U DOCK HELL                                 | 1414         |                                                |
|                                                               | 168      | ENDC             | IDEVICES_SERIAL_I                           | EKIME        |                                                |

| Commoder-Amiga, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| ALEZZEZZ **** CHH. é.e.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| IFND DEVICES_TRACKDISK_I  DEVICES_TRACKDISK_I SET 1  IFND EXEC_IO_I  INCLUDE "exec_/io.i"  ENDC !EXEC_IO_I  INCLUDE "exec_/io.i"  ENDC !EXEC_IO_I  INCLUDE "exec_/io.i"  Physical drive constants  WANCTLS EQU 80  NUMCTLS EQU 80  NUMCTLS EQU 11  NUMCTLS EQU 11  NUMCTLS EQU 11  NUMCTLS EQU 10  NUMCTLS EQU |            |           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| INCLUDE "exec/lo.1"  * Physical drive constants  * WANCYLS EQU 80  * NUMCYLS EQU 80  * NUMCYLS EQU 80  * NUMCYLS EQU 11  * Useful constants  * Useful constants  * Useful constants  * Driver Specific Commands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 21         | IEND E    | XPC TO                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ENDC !EXEC_IO_I  Physical drive constants  NUMCYLS EQU 80  NUMCYLS EQU 11  NUMCYLS EQU 12  NUMCYLS EQU 1  NUMCYLS EQU 2  NUMCYLS EQU 2  NUMCYLS EQU 2  NUMCYLS EQU 4  Useful constants  10 SECTOR  D.SECTOR  D | 22         | TWCT.IIDP |                                                 | =                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| * Physical drive constants  * WWCYLS EQU 80                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |           |                                                 | C/10.1"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| ** Physical drive constants  ** WUNCYLS** EQU 80  ** WAXCYLS** EQU 11  ** WAXCYLS** EQU 11  ** WUNGECS** EQU 14  ** WUNGECS** EQU 4  ** Useful constants  ** Useful constants  ** Useful constants  ** The SECTOR** EQU 512  ** The SECTOR** EQU 9 : log TD_SECTOR**  ** Driver Specific Commands**                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>5</b> 7 |           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| * Physical drive constants  **  **  **  **  **  **  **  **  **                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 52         |           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| NUNCILS EQU 80  NUNCILS EQU 80  NUNCILS EQU 80  NUNCILS EQU 80  NUNCILS EQU 11  NUNCILS EQU 10  10  10  10  10  10  10  10  10  10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| NUMCYLS EQU 80 ; normal # of cylinders MAXCILS EQU NUMCYLS+20 ; max # of cyls to look NUMSECS EQU 11 NUMERADS EQU 2 MAXRETRY EQU 10 NUMTRACKS EQU NUMCYLS*NUMERADS NUMTRACKS EQU NUMCYLS*NUMERADS NUMUNITS EQU 4 * Useful constants TD_SECTOR EQU 512 TD_SECTOR * D-liver Specific Commands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            | Physical  | drive                                           | constants                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| NUMCYLS EQU 80 ; normal # of cylinders MAXCYLS EQU NUMCYLS+20 ; max # of cylinders NUMCHEADS EQU 11 NUMCHEADS EQU 11 NUMCHEADS EQU 10 NUMCHEADS EQU 10 NUMCHEADS NUMCH |            | ••        |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| NUMCYLS EQU 80 ; normal # of cylinders MAXCILS EQU NUMCYLS+20 ; max # of cyls to look NUMCSCS EQU 11 ; during a calibrate NUMCHEADS EQU 1 NUMCHEADS EQU 10 NUMCHEADS EQU 10 NUMCHEADS EQU 4 * sizes before mfm encoding TD_SECTOR EQU 512 TD_SECTOR EQU 9 ; log TD_SECTOR * briver Specific Commands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 76 ¥       |           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| NUMCYLS EQU 80 ; normal # of cylinders MAXCYLS EQU NUMCYLS+20 ; max # of cyls to look NUMCSECS EQU 11 ; during a calibrate NUMCHEADS EQU 10 NUMCHEADS EQU 10 NUMCHEADS | ဓ          |           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| NUMCXIS EQU 80 ; normal # of cylinders MAXCTIS EQU NUMCYIS+20 ; max # of cyls to look NUMSECS EQU 11 NUMERACKS EQU 10 NUMERACKS EQU NUMCYIS*NUMERADS NUMERACKS EQU NUMCYIS*NUMERADS NUMERACKS EQU NUMCYIS*NUMERADS NUMERACKS EQU 4  * Useful constants  * Useful constants  * D.SECTOR EQU 9 ; log TD_SECTOR  * D-liver Specific Commands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MAXCXLS EQU NUMCYLS+20; max # of cyls to look NUMCSCS EQU 11 NUMCHEADS EQU 2 MAXRETRY EQU 10 NUMTRACKS EQU 10 NUMTRACKS EQU 4 NUMCHIADS NUMTRACKS EQU 4  * Useful constants  * Useful constants  TD_SECTOR EQU 512 TD_SECTOR EQU 9; log TD_SECTOR  * D-liver Specific Commands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            | CALS      | <u>S</u>                                        | : normal #                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| NUMERCS EQU 11  NUMERADS EQU 1  MAXRETRY EQU 10  NUMERACKS EQU 10  TO SECTOR EQU 512  TO SECTOR EQU 512  TO SECTOR  D TO SECTOR  D TO TO SECTOR  D TO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | _          | CYLS      | <u>S</u>                                        | : max # of cyls to look                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| NUMERCS EQU 11 NUMERADS EQU 2 NUMERACS EQU 10 NUMERACS EQU 10 NUMERACS EQU 4  * Useful constants  * Useful constants  * To_SECTOR EQU 512 TO_SECTIFT EQU 9 ; log TD_SECTOR  * Driver Specific Commands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |           |                                                 | during a calibrate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| NUMTRADS EQU 2 MAXRETRY EQU 10 NUMTRACKS EQU 4  * Useful constants  * Useful constants  TD_SECTOR EQU 512  TD_SECTOR EQU 512  TD_SECTOR EQU 9 ;  * Driver Specific Commands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            | SECS      | EOC                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MAXRETRY EQU 10 NUMTRACKS EQU NUMCYLS*NUM NUMUNITS EQU 4  * Useful constants  * sizes before mfm encoding TD_SECTOR EQU 512 TD_SECHIFT EQU 9 ; * briver Specific Commands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            | THEADS    | , C                                             | 1 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| NUMTRACKS EQU 4  NUMUNITS EQU 4  * Useful constants  * D.SECSHIFT EQU 9  * Driver Specific Commands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | _          | RETRY     | ֓֞֝֞֝֞֝֞֟֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֓֓֓֓֓֡֓֓֡֓֡֓֡֓֡ | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| * Useful constants  * Useful constants  * sizes before mfm encoding  TD_SECTOR EQU 512  TD_SECSHIET EQU 9 ;  * Driver Specific Commands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            | TOACTO    | Š                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| * Useful constants  * sizes before mfm encoding TD_SECTOR EQU 512 TD_SECSHIET EQU 9 ;  * Driver Specific Commands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | _          | INTE      | 3.5                                             | NOTICE IN STREET |
| * Useful constants  * sizes before mfm encoding TD_SECTOR EQU 512 TD_SECSHIET EQU 9 ;  * Driver Specific Commands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | •          | CT THO    | 3.                                              | *                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| * sizes before mfm encoding TD_SECTOR EQU 512 TD_SECSHIET EQU 9 ;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | •          |           | nstant                                          | <b>.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| * sizes before mfm encoding TD_SECTOR EQU 512 ; t TD_SECSHIFT EQU 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 45         |           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| * sizes before mfm encoding TD_SECTOR EQU 512 ; * TD_SECSHIET EQU 9 ; * ** Decouple of the commands of t       | Ç Y        |           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| TD_SECTOR EQU 512 TD_SECSHIET EQU 9 ;  * D_SECSHIET EQU 9 ;  * D_Tver Specific Commands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | £ 4        |           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| TD_SECTOR EQU 512  TD_SECSHIET EQU 9  *  Description of the companies of t | *          |           | - 000                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| TD_SECSHIET EQU 9 ;  D_SECSHIET EQU 9 ;  D_topic Specific Commands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            | ortens or |                                                 | mim encoding                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Driver Specific Commands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | SECTOR    | 3,5                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| * Driver Specific Commands                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            | SECONIE I | 3,                                              | ••                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Driver                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| . Driver                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 53         |           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| * Driver                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 54         |           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| * Driver                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | *          |           |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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devices/trackdisk.1 Page 3
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 ENDC DEVICE_TRACIOISK_I
 Driver error defines
 IDERR_BadSecPreamble
IDERR_BadSecID
 TDERR BadDriveType
TDERR DriveInUse
 TOERR_NotSpecified
 DERR DiskChanged
 TDERR_TooFewSecs
TDERR_BadSecHdr
 DERR BadUnitNum
 IDERR BadHdrSum
 TDERR BadSecSum
 IDERR WriteProt
 IDERR Soulderror
 DERR NoSecHdr
 TDERR NoWern
 8 16:41 1985
 121
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 118
 These commands
 TD_NAME is a generic macro to get the name of the driver. This
 --- way if the name is ever changed you will pick up the change
 number of disk changes
number of disk changes
is there a disk in the drive?
is the disk write protected?
 control the disk's motor explicit seek (for testing)
 ; removal/insertion count
; sector label data region
 * extended 10 has a larger than normal to request block.
 * The disk driver has an "extended command" facility.
* take a superset of the normal IO Request block.
 format disk
 * labels are TD_LABELSIZE bytes per sector
 (TD_FORMATITDE_EXTOOM)
(CMD_UPDATE!TDE_EXTOOM)
(CMD_CLEAR!TDE_EXTOOM)
 CAD_WRITE!TDF_EXTCOM)
 (CHD_READ! TDE_EXTOOM)
(TD_MOTOR! TDE_EXTOOM)
(TD_SEEK! TDE_EXTOOM)
 Dec 8 16:41 1985 devices/trackdisk.i Page
 DC.B 'trackdisk.device',0
DS.W 0
ENDM
 TO PROTSTATUS
 16
 STRUCTURE IOEXTID, IOSTO_SIZE
 TO CHANCENUM
TO CHANCESTATE
TO PROTSTATUS
 1-- Normal usage would be:
 젒
 1-- InternalName: TD_NAME
 TD, EXTCOM, 15
 ULONG IOTD_COUNT
ULONG IOTD_SECLABEL
 TO FORMAT
TO REMOVE
 TO MOTOR
 TO SEEK
 LABEL IOTO_SIZE
 -- automatically.
 TO LASTCOMM EQU
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DEVCHO

SEVONO EVONO SEVO! DEVO

DEVO

DEVO

DEVINIT

BITDEF

ETD\_READ ETD\_MOTOR ETD\_SEEK ETD\_FORMAT ETD\_UPDATE ETD\_CLEAR

ETD WRITE

TO LABELSIZE

TO JUANTE: MACIRO

TASK\_ABLES MACRO
\* INCLUDE 'execbase.1' for IDNestCnt offset 4,\1 #1,IDNestCnt(\1) ENABLE\@ C '\1','' MOVE.L 4,\1 SUBQ.B #1.IDNestCnt(\1) BCE.S ENABLE(@ MOVE.W #\$0C000,\_interm MACRO ADDQ.B #1, TDNestCnt (A6) ENDM LVOPermit (A6) Dec 8 16:41 1985 exec/ables.1 Page 2 \_LVOPermit Tasking Exclusion Macros ENDC ! EXEC\_ABLES\_I MACRO JSR ENDM XREF ENDM IENC ENABLE\@: ENDC FORBID PERMIT 

\* Commodore-Amiga, Inc. -- ROM Operating System Executive Include File \* externals for dis/enable \* (NOT IF\_SETCLR) +IF\_INTEN \* (NOT IF\_SETCLR) +IF\_INTEN \*IF\_SETCLR+IF\_INTEN \$Header: ables.1,v 1.0 85/08/28 15:05:30 carl Exp \$ MOVE.W #\$04000, intena ADDQ.B #1,IDNestCnt(A6) SUBQ.B #1,IDNestCnt(A6) S ENABLE\@ BCE.S ENABLEN© MOVE.W #\$0C000,\_intena MACRO \* [scratchReg] RO \* [scratchReg] 8 16:41 1985 exec/ables.1 Page 1 Interrupt Exclusion Macros INCLUDE "exec/execbase.1"
ENDC !EXEC\_EXECBASE\_I \_intena IFND EXEC\_TYPES\_I INCLUDE "exec/types.1" ENDC !EXEC\_TYPES\_I IFND EXEC\_EXECBASE\_I Source Control: MACRO MACRO XREE ENDM ENDM \$Locker: \$ ENDC ENABLE\@: ENDC IFC IFC INT ABLES DISABLE ENABLE **B**C E-17

| Dec 8 16:41 1985 exec/alerts.1 Page 2  57 * ALERT (AN TimerDevIAC_OperLib!AO_MathLib), (A0), A1 | ***************************************                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 61 ; alert types<br>62 AT DeadEnd equ \$8000000<br>63 AT_Recovery equ \$0000000<br>64                           | G. NoMemory equated by McG. NoMemory equate McG. MakeLib equate McG. OpenLib equate McG. |                                                               | AO_ExecLib                                           | 76 AU_LayersLib equ \$00008003 77 AO_Intuition equ \$00008004 78 AO_Mathlib equ \$00008005 79 AO_ListLib equ \$00008006 60 AO_ROST ib equ \$00008006 | AO RAMLID equ                                                | AO_Audiobay equ<br>AO_ConsoleDay equ<br>AO_GamePortDay equ<br>AO_TrackDiskDay equ<br>AO_TimerDay equ<br>AO_TimerDay equ<br>AO_CIARsrc equ                                                                                    | 90 AD_Disputer equ \$00008021<br>91 AD_MiscRisc equ \$00008022<br>92 AO_BootStrap equ \$00008030<br>93 AO_Workbench equ \$00008031                                                                                                                  | * Specific Dead-E                                                                                                                           |                                         | 107 AN_Exactib equ \$01000000 ; 68000 exception vector checksum 107 AN_Exactib equ \$81000001 ; 68000 exception vector checksum 109 AN_Exceptions equ \$81000002 ; exechase checksum 110 AN_LibChkSum equ \$81000002 ; library checksum failure 111 AN_LibChkSum equ \$81000004 ; no memory to make library 112 AN_MemCorrupt equ \$81000005 ; corrupted memory list |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8 16:41 1985 exec/alerts.1 Page 1                                                               | 1 IFND EXEC_ALERIS_I<br>2 EXEC_ALERIS_I SET 1<br>3 desterratementalemen | 4 * 5 2 Commodore-Amiga, Inc ROM Operating System Executive Include File 6 * 7 ******************************** | 8 * Source Control:<br>10 * 11 * \$Header: alerts.1,v 1.0 85/08/28 15:05:58 carl Exp \$  | 12 * \$Locker: \$<br>14 * 15 ******************************** | 16 17 BITDEF S,ALERIWACK,1 * in ExecBase.SysFlags 19 | 10 sascanasasasasasasasasasasasasasasasasas                                                                                                          | 25 *  D  SubSysId   Ceneral Error   SubSystem Specific Error | 27 * D: DeadEnd alert<br>28 * SubSysId: indicates ROM subsystem number.<br>30 * General Error: roughly indicates what the error was<br>31 * Specific Error: indicates more detail<br>32 ************************************ | 34 * 35 * Use this macro for causing an alert. THIS MACRO MAY CHANCE! 35 * Use this macro for causing an alert. THIS MACRO MAY CHANCE! 36 * It is very sensitive to memory corruption like stepping on 37 * location 4! But it should work for now. | 38 * 39 ALERT macro (alertNumber, paramArray, scratch) 40 movem.1 d7/a5/a6, - (sp) 41 move.1 # \ 1, d7 42 IFNC '\ 2, ' ' 43 lea \ 2, 2, ' \ | ENDC<br>move. ]<br>jsr<br>movem<br>endm | 49 50 49 50 49 50 49 50 49 50 49 60 60 60 60 60 60 60 60 60 60 60 60 60                                                                                                                                                                                                                                                                                              |

memory copper instruction list, no memory Bad State Return entering Intuition Weird echo causing incomprehension couldn't open the Console Device copper intermediate list overload ; no memory for interrupt servers ; InitStruct() of an APTR source copper display list, no memory Recovery form of AN\_GadgetType open screen, raster alloc, no open sys screen, unknown type Bad Message received by IDCMP copper list head, no memory item plane alloc, no memory flood fill, no memory text, no memory for ImpRas Unexpected packet received add SW gadgets, no memory Freevec failed Disk block sequence error long frame, no memory short frame, no memory item box top < RelZero create port, no memory plane alloc, no memory open screen, no memory open window, no memory copper list overload BltBitMap, no memory sub alloc, no memory no memory at startup unknown gadet type Key already free Invalid checksum EndTask didn't Bitmap corrupt Opkt failure Disk Error exec/alerts.i Page 3 AN\_CopListHead equ \$82010005
AN\_Longframe equ \$82010006
AN\_Shorfframe equ \$82010007
AN\_TextIngRas equ \$02010008
AN\_BltBltMap equ \$82010009 AN\_CopilistOver equ \$82000003 AN\_CopilistOver equ \$82000004 equ \$84000001 equ \$0400001 equ \$04010002 equ \$04010003 equ \$04010004 equ \$8400006 equ \$8400006 c equ \$8401000A equ \$8401000B equ \$8400000C equ \$8400000D equ \$8400000E equ \$8400000E AN\_OpenScrnRast equ \$84010008 equ \$81000006 equ \$81000007 equ \$07010001
equ \$07000002
equ \$07000004
equ \$07000006
equ \$07000006
equ \$07000006
equ \$07000009 equ \$82010002 AN\_GraphicsLib equ \$02000000 equ \$82010001 equ \$03000000 equ \$04000000 \$84000001 AN\_SysScrnType equ \$84000009 ;----- math.library AN MathLib equ \$0500000 N.C. clist.llbrary equ \$06000000 equ\_\$07000000 intuition.library -- graphics.library ;----- layers.library :----- dos.library AN\_AddSMCadget AN\_OpenWindow AN\_CopDisplay AN PlaneAlloc AN\_CadgetType AN\_CreatePort AN\_ItemBoxTop AN\_OpenScreen AN\_BadMessage AN\_WeirdEcho AN\_FreeVec AN\_DiskBlkSeq AN\_Intuition AN\_LayersLib W\_ItemAlloc AN\_IntrMem AN\_InitAPtr AN\_BadCadget AN\_NoConsole AN\_KeyFree AN\_BadChkSum AN BadState AN CopInstr AN\_SubAlloc AN\_StartMen AN DiskError W CListLib AN\_AsyncPkt AN\_QPktFa11 8 16:41 1985 AN EndTask AN\_BitMap AN DOSELLE <u>D</u>

```
; callbrate: seek error
; delay: error on timer wait
 : get unit: already has disk
; interrupt: no active unit
 ; boot code returned an error
 ; Key out of range
; Bad overlay
 equ $15000000
equ $15000001 ; bad request
 equ $0700000B
equ $0700000C
 AN_TrackDiskDev equ $14000000
 AN_TDCalibSeek equ $14000001
AN_TDDelay equ $14000002
 equ $08000000
 90000060$ nbe
 equ $10000000
 AN_ConsoleDev equ $11000000
 AN_CamePortDev equ $12000000
 AN_KeyboardDev equ $13000000
 equ $30000000
equ $30000001
 equ $21000002
 equ $20000000
 equ $21000000
 equ $21000001
 equ $22000000
 AN_Workbench equ $31000000
 ----- trackdisk.device
 gameport.device
 ----- keyboard.device
 ----- ramlib.library
 ----- console.device
 disk.resource
 ENDC PEXEC ALERTS I
 timer.device
 ----- misc.resource
 ----- 1con.library
 ----- audio.device
 ----- cia.resource
 ----- bootstrap
 ----- workbench
 AN_BadOverlay
 AN DRIntNoAct
 AN_KeyRange
 AN_BootStrap
 AN_DRHasDisk
 AN_AudioDev
 AN_DiskRsrc
 AN_TimerDev
 AN_IMBadReq
 AN_MiscRsrc
 AN_BootError
 AN_IconLib
 AN_CIARSIC
 AN_RAME.1b

 169
170
171
172
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| Source Control:  \$ \$\text{steader: errors.1,v 1.0 85/08/28 15:07:26 carl Exp \$ } \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ |
|----------------------------------------------------------------------------------------------------------------------------------------|
|----------------------------------------------------------------------------------------------------------------------------------------|

| If the Exec_Devices.1 Page 1  EXEC_DEVICES_I  EXEC_DEVICES_I SET 1  * Commodore-Amiga, Inc ROM Operating System Executive Include File  ** Source Control:  * \$Header: devices.1,v 1.0 85/08/28 15:07:02 carl Exp \$ | \$Locker: \$  IFUD EXEC_LIBRARIES_I INCLUDE "exec/libraries.1" IFND EXEC_LIBRARIES_I INCLUDE "exec/ports.1" INCLUDE "exec/ports.1" ENDC !EXEC_PORTS_I | STRUCTURE DD,LIB_SIZE * identical to library LABEL DD_SIZE * identical to library  * Suggested Unit Structure | STRUCTURE UNIT.MP.SIZE * queue for requests UBYTE UNIT.FLACS UBYTE UNIT.PLACS UNIT.PLACS UNIT.OPENCHT LABEL UNIT.SIZE  * UNIT.FLAC definitions: BITDER UNIT.ACTIVE, 0 * driver is active BITDER UNIT.INTASK, 1 * running in driver's task ENDC !EXEC_DEVICES_I |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a                                                                                                                                                                                                                     |                                                                                                                                                       | SIS                                                                                                           |                                                                                                                                                                                                                                                                |

```
8 16:41 1985 exec/exec_lib.i Page 1
 Signal
AllocSignal
FreeSignal
 Enqueue
FindName
AddTask
RemTask
FindTask
SetTaskPri
SetTaskPri
SetExcept
 FUNCDEF
FUNCDEF
FUNCDEF
FUNCDEF
FUNCDEF
 FUNCOEF
 80
```

```
"exec/interrupts.1"
"exec/memory.1"
"exec/ports.1"
"exec/tasks.1"
 "exec/libraries.1"
"exec/devices.1"
"exec/10.1"
8 16:41 1985 exec/exec.1 Page 1
 "exec/nodes.1"
"exec/lists.1"
 INCLUDE
INCLUD
 8
 - E-21 -
```

| 8 112 112 112 112 113 113 113 113 113 113 |
|-------------------------------------------|
|-------------------------------------------|

| 57         | STRUCT           | IVPORTS, IV_SIZE           | IZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------|------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8 6        | STRUCT           | IVOLPER, IV_SIZE           | 172                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 60         | STRUCT           | TVRLIT IV SIZE             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 61         | STRUCT           | IVAUDO, IV SI              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 62         | STRUCT           | IVAUDI, IV_SIZE            | 22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 63         | STRUCT           | IVAUD2, IV_SI              | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>64</b>  | STRUCT           | IVAUD3, IV_SIZE            | 222                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 65         | STRUCT           | IVRBE, IV_SIZE             | œ.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 99         | STRUCT           | INDSKSYNC, IV              | SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 67         | STRUCT           | IVEXTER, IV_SIZE           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 28         | SIKUCI           | IVINTEN, IV.               | 175                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 70         | STRUCT           | 1VINT, 1V_514E             | ıı.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|            |                  |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 72 *****   | *** Dynamic Syst | cem Variables              | ****** Dynamic System Variables ************************************                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 2 :        |                  |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| * !        |                  | Inisiask                   | ; pointer to current task                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ٠<br>د ا   |                  | IdleCount                  | ; idle counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 9          |                  | DispCount                  | ; dispatch counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| F.         |                  | Quantum                    | ; time slice quantum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 78         | UMORD EJ         | Elapsed                    | ; current quantum ticks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 79         | UNORD SY         | SysFlags                   | ; misc system flags                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 80         | BYTE I           | IDNestCnt                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 81         | BYTE TE          | <b>IDNestCnt</b>           | task disable nesting count                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 82         |                  | i                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 83         |                  | AttnFlags                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>5</b> 5 | _                | Attnikesched               | reschedu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 65         | APIK Ke          | Kesmodules                 | ; pointer to resident module array                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 2 8        |                  | J. Manney J.               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>,</b>   | APIK 188         | Telegramatical             | ; default task trap routine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 8 8        |                  | TooleguitCode              | default task                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|            | AFIR 183         | SKEXILLOOP                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 3 3        |                  | ULUNG TASKSIGALIOC         | ; preallocated signal mask                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 1.6        | UNOKO TS         | UNCKU TASKITAPATIOC        | ; preallocated trap mask                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 76         | •                |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|            | 144 Suntan I lat | Handows at the             | Antibite Court on I lat III and the second s |
|            | System List      | District Street            | 跳膀球球球球球球球球球球球球球球球球球球球球球球球球球球球球球球球球球球球球                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| :<br>:     | STREET           | Mamiliat IN ST7P           | 84.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 3 8        | STRIFT           | Poeniroof 1et III          | 11 8177                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Š          | STRICT           | Davice Let IH SIZE         | 1212F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 2 8        | TOUTO S          | Tatel int I'm C178         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| , ,        | CHOICH           | TANTANT TO CTOR            | 37710                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 3 6        | STRUCT           | Librasi, in                | 77                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 101        | STRUCT           | Forthist, LA Size          | 3710                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 707        | STRUCT           | Taskweady, LALSIZE         | 2712                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 103        | SIKUCI           | Taskwait, LH_SIZE          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 105        | STRIKE           | Soft Inte SH SIZP#5        | 17745                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 106        |                  |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 107        | STRUCT           | LastAlert, 4*4             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 108        |                  |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 109        | LONG Exe         | LONG ExecBaseReserved, 4*8 | 4*8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 111        | LABEL SY         | LAREL SYSBASESIZE          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ***        |                  |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

| 1 EXEC<br>1 EXEC<br>2 EXEC<br>4 + 1 + 1 + 4 + 1 + 4 + 4 + 4 + 4 + 4 + | IFND EXEC_INIT  EXEC_INITIALIZERS_  ** Commodore-Amiga,  ** \$Loance Control  * \$Header: initia  ** \$Locker: \$  INITENTE MAR  DD  DD  DD  DD  DD  DD  DD  DD  DD | IFND EXEC_INITIALIZERS_I  "INITIALIZERS_I SET 1  "INITIALIZERS_I SET | IFND EXEC_INITIALIZERS_I   EXEC_INITIALIZERS_I   EXEC_INITIALIZERS_I   ST 1 |
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| 52<br>52<br>53<br>54<br>55<br>55                                      |                                                                                                                                                                     | IFLE (C.B.DC.B.DC.B.MEXIT ENDC DC.B.DC.B.DC.B.DC.B.DC.B.DC.B.DC.B.DC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | $\overline{\mathbb{Z}}$                                                     |

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Dec 6 16:41 1965 exec/executans. 1 Page 1

1 TEND EXEC_EXECUTAE

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| EXEC_INTERRUPTS_I SET 1  *********************************** | 9 | 15 ************************************ | 26 * 27 * Interrupt Structure 29 * 30 * 31 * 31 * 32 * 33 * 34 * 34 * 34 * 35 * 36 * 36 * 36 * 37 * 37 * 37 * 38 * 39 * 30 * 30 * 30 * 30 * 30 * 30 * 30 * 30 | 38 * | 43 44 STRUCTURE IV,0 46 APTR IV_DATA 46 APTR IV_CODE 47 APTR IV_NODE 48 LABEL IV_SIZE 50 | 51 * System Flag bits (in SysBase.SysFlags ) 52 BITDEF S.SAR.15 * scheduling attention required 54 BITDEF S.TQE.14 * time quantum expended time to resched |
|--------------------------------------------------------------|---|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
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| SC_IO_I ET 1  Amiga, Inc  Control:  io.i,v 1.0 85/  \$  \$  C_FORTS_I  "exec/ports.i"  EC_FORTS_I  "exec/librarie  NEC_FORTS_I  "exec/librarie  NEC_LIERARIES_I  COMM.SIZE  IO.NN.SIZE  IO.NN.SIZE  IO.NN.SIZE  IO.NN.SIZE  IO.NN.SIZE  IO.NN.T  IO.OFFACS  IO.SIZE  IO.NATAR  IO.SIZE  IO.NATAR  IO.OFERET  IO.OFERET  IO.OFERET  IO.OFERET  IO.OFERET  IO.OFERET  IO.OFERET  IO.NESERVEDI  IO.RESERVEDI  IO.RESERVED   | }              |                          |                                                         |                                                                             |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 4.0            | * Commodore-             | Inc                                                     | ROM Operating System Executive Include File                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 9 6            | ***********              | *****************                                       |                                                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | - 00 (         | * *                      |                                                         |                                                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | , 51           | * Source                 | ontroi:                                                 |                                                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | # 5            | * \$Header:              | 10.1,v 1.0 85/08/                                       |                                                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 13             | *                        | €0-                                                     |                                                                             |
| IFND EXEC_PORTS_I  INCLUDE "exec/ports.i"  ENDC !EXEC_PORTS_I  INCLUDE "exec/libraries.i"  INCLUDE "exec/libraries.i"  INCLUDE "exec/libraries.i"  ENDC !EXEC_LIBRARIES_I  * IO Request Structures  * IO Request Structures  * TO Request Structures  * TO Request Structures  * TO Request Structures  * TO DEVICE * unit (driver UNORD IO_COMMAND * device command INSTER IO_LINIT * unit (driver IO_ERACS BTTE IO_ERACS * special flag  BYTE IO_ERACS * error or war LABEL IO_SIZE  * ULONG IO_ACTUAL * actual # of ULONG IO_ACTUAL * requested # requested # requested # requested # request IO_COMMAND * requested # requ | 14<br>15       |                          | **************                                          | 在在在我的存在我们的现在分词 化二氯甲基苯甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基                   |
| INCLUDE "exacc/ports.1  INCLUDE "exacc/libraries.1"  INCLUDE "exacc/libraries.1"  ENDC !EXEC_LIBRARIES_I  INCLUDE "exacc/libraries.1"  ENDC !EXEC_LIBRARIES_I  * IO Request Structures  * IO DEVICE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 17             |                          | EC_PORTS_I                                              |                                                                             |
| IFND EXEC_LIBRARIES_I INCLUDE "exec/libraries.1" ENDC IEXEC_LIBRARIES_I ENDC IEXEC_LIBRARIES_I  * IO Request Structures  * AFTR IO_DEVICE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 8 E            |                          | "exec/ports.1"<br>REC_PORTS_1                           |                                                                             |
| INCLUDE "exec/libraries.1"  ENDC !EXEC_LIERARIES_I  * IO Request Structures  * IO Request Structures  * IO Request Structures  * IO BEQUITE IO. MN SIZE  APTR IO_UNIT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2 2            |                          | EC_LIBRARIES_I                                          | •                                                                           |
| * IO Request Structures  * IO Request Structures  * Required portion of IO request:  STRUCTURE IO, MN_SIZE APTR IO_DUNIT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 22             |                          | "exec/libraries.i<br>KEC_LIERARIES_I                    | <u>.</u>                                                                    |
| * 10 Request Structures  * Required portion of 10 request:  * Required portion of 10 request:  APTR 10_DEVICE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 24 z           |                          |                                                         |                                                                             |
| * 10 Request Structures  * Required portion of 10 request:  STRUCTURE 10, MN_SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 185            | * *                      |                                                         |                                                                             |
| STRUCTURE 10, MM_SIZE  APTR 10_DEVICE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2 28           | * *                      |                                                         |                                                                             |
| STRUCTURE 10, MM. SIZE APTR 10_DEVICE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 8 5            | *                        |                                                         |                                                                             |
| STRUCTURE 10, MM_SIZE  APTR 10_DEVICE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 32             |                          |                                                         | lo request:                                                                 |
| APTR 10_UNIT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 888            |                          | IO, MN_SIZE                                             | * davice node pointer                                                       |
| UNCRD 10_COMMAND                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 8<br>8         |                          | IO_UNIT                                                 |                                                                             |
| ## CONTROL OF STATE    CARROR   CARROR  | 36             |                          |                                                         | devic                                                                       |
| * Standard IO request extension:  ULONG IO_ACTUAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 888            |                          | IO ERROR                                                | error or warning                                                            |
| * Standard IO request extension: ULONG IO_ACTUAL * actual # of ULONG IO_LENTH * requested # APTR IO_DATA * pointer to G ULONG IO_RESERVEDI * offset for s * ULONG IO_RESE      | 44             |                          |                                                         |                                                                             |
| ULONG 10_ACTUAL * actual # of ULONG 10_LENGTH * requested # APTR 10_DATA * pointer to G ULONG 10_QEFSET * offset for s* * ULONG 10_RESERVED1 * ULONG 10_RESERVED2 LABEL 10STD_SIZE LABEL 10STD_SIZE  * ACTUAL 10_FLAGS bit definitions:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4.             | +                        |                                                         | extension:                                                                  |
| APTR 10_DATA + pointer to curons 10_DATA + pointer to curons 10_DATA + offset for set ulcar 10_RESERVED1 + ulcar 10_RESERVED1 + ulcar 10_RESERVED2   LABEL 10STD_SIZE   10_FLACS bit definitions:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>2</b>       |                          | IO ACTUAL                                               | <pre>* actual # of bytes transfered * requested # of bytes transfered</pre> |
| ULONG 10_CEREST  * ULONG 10_RESERVED1  * ULONG 10_RESERVED2  LAMEL 10SID_SIZE  10_FLACS bit definitions:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | £ & .          |                          | IO DATA                                                 | * pointer to data area                                                      |
| * ULONG IO_RESERVED2 LABEL IOSTD_SIZE  IO_FLAGS bit definitions  BITTAPE IO OUTCH 0 *                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <del>4</del> 4 | •                        | IO_RESERVED1                                            | 5                                                                           |
| IO_FLAGS bit definitions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2 22 23        | *                        | IO_RESERVED2<br>IOSTD_SIZE                              |                                                                             |
| * ONDER TO CHICK O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ได้เก็ร        | ا                        | FLACS bit definit                                       | tons:                                                                       |
| DI IDEE TO YOU'VE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | พี พั          | 5<br>BITDEF              | IO, QUICK, 0                                            | * complete IO quickly                                                       |

| 88 6 2 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8         | t Ctandar                 |                                    | ••                                |
|--------------------------------------------------|---------------------------|------------------------------------|-----------------------------------|
| <b>2</b> 2 2 2 2 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 |                           |                                    |                                   |
| 3 2                                              | LIBINIT                   | LIBINIT LIB_BASE                   |                                   |
| 65                                               | LIBOEF                    | LIB_CLOSE                          |                                   |
| 86<br>66<br>68<br>68<br>68                       | LIBOEF                    | LIB_EXTFUNC * reserved             | * P8                              |
| 8228                                             | *<br>Standar              | Standard Library Data Structure    |                                   |
| 4<br>4<br>5<br>5                                 | STRUCTURE                 | LIB, IN_SIZE                       |                                   |
| F 82                                             | UBYTE                     | LIB_pad                            | the section of batter backers the |
| 8 2                                              | CACKED CACKED             | LIB_POSSIZE                        | number                            |
| 81<br>83                                         | UMORD                     | LIB_VERSION<br>LIB REVISION        | * major<br>* minor                |
| 83                                               | APTR                      | LIB_IDSTRING                       | * identification                  |
| <b>2</b> 8                                       | UNCONC                    | LIB_OPENCAT                        | * number of current opens         |
| 8 6                                              | LABEL                     | LIB_SIZE                           |                                   |
| 8 8                                              | * LIB                     | - LIB_FLACS bit definitions:       |                                   |
| 90                                               | BITDEF                    | LIB, SUMMING, 0                    | * we are currently checksumming   |
| 93<br>93                                         | BITDEF                    | LIB, CHANGED, 1<br>LIB, SUMUSED, 2 |                                   |
| ¥ % %                                            | BITDEF                    | LIB, DELEXP, 3                     | * delayed expunge                 |
| 16                                               | +                         |                                    |                                   |
| 9 S                                              | * Functio                 | Function Invocation Macros         |                                   |
| 100                                              | * *                       |                                    |                                   |
| 102<br>103                                       | * CAL                     | CALLIB for calling functions       | where A6 is already correct:      |
| 104                                              | CALLLIB MA<br>IFCT NARG-1 | MACRO * functionOffset<br>RG-1     | ٠                                 |
| 107                                              | EAIL                      | 111 CALLLIB MACRO -                | too many arguments !!!            |
| 109                                              |                           | JSR \1(A6)                         |                                   |

| Apc 8 16:41 1985 exec/libraries.i Page 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| 1 IFND EXEC_LIBRARIES_I<br>2 EXEC_LIBRARIES_I SET 1<br>3 execcessions and the contraction of th | 4 4                                     |
| 4 *<br>5 * Commodore-Amiga, Inc ROM Operating System Executive Include File<br>6 *                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | le File                                 |
| * Source Control:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                         |
| 10 * 8Header: libraries.1,v 1.0 85/08/28 15:11:09 carl Exp \$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ٠                                       |
| 12 * \$Locker: \$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | * * * * * * * * * * * * * * * * * * * * |
| 17 IFND EXEC_NODES_I<br>18 INCLUDE "exec/nodes.1"<br>19 ENDC !EXEC_NODES_I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                         |
| 21<br>22 * Special Constants                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1                                       |
| 23 24 LIB_VECTSIZE EQU 6 25 LIB_RESERVED EQU 4 26 LIB_BASE EQU \$FFFFFFA * (-LIB_VECTSIZE) 27 LIB_USERDEF EQU LIB_BASE-(LIB_RESERVED*LIB_VECTSIZE) 28 LIB_NONSID EQU LIB_USERDEF 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                         |
| 30 *                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | : :                                     |
| * LIBINIT set                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | :s:                                     |
| LIBINIT MACRO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                         |
| COUNT_LIB SET ENDC ' IFNC ' COUNT_LIB SET                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                         |
| 44 ENDM<br>45 ENDM<br>46 47<br>48 * LIBDEF is used to define each library function entry:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                         |
| 49 50 LIBDEF MACRO * libraryfunctionSymbol 51 \lambda EQU COUNT_LIB 52 COUNT_LIB SET COUNT_LIB-LIB_VECTSIZE 53 ENDM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                         |
| 55 5.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                         |

\* Commodore-Amiga, Inc. -- ROM Operating System Executive Include File \$Header: lists.1,v 1.1 85/09/06 15:49:56 carl Exp \$ MACRO \* 11st MOVE.L '1, (1) ADDQ.L #LH\_TAIL, (1) CIR.L IH\_TAIL(1) MOVE.L \1, (IH\_TAIL+IM\_PRED) (\1) ENDM IFC '\1',''
CMP.L LH\_TALL+LN\_PRED(A0),A0 ENDC '\1',''

O'P. L LH\_TAIL+LN\_PRED(\1),\1

ENDC
ENDC MACRO \* node, succ MOVE.L (\1),\2 ENDM Dec 8 16:41 1985 exec/lists.1 Page 1 IFND EXEC\_NODES\_I INCLUDE "exec/nodes.1" ENDC !EXEC\_NODES\_I LH\_TAIL LH\_TAILPRED LH\_TYPE LH\_pad LH\_SIZE Source Control: List Structures \$Locker: \$ STRUCTURE
APTR
APTR
APTR
UBYTE
UBYTE
LABEL NEWLIST TSILIST 4 \* \* Common Services | Common

| exec/libraries.1 Page 3 | for calling functions where A6 is incorrect:  RO * functionOffset,libraryBase  !!! LINKLIB MACRO - too many arguments !!!  E.L A6,-(SP)  E.L A6,-(SP)  E.L A6,-(SP)  E.L (SP)+,A6  M  LIERARIES_I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |          |  |  |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--|--|
| 16:41 1985 exec/118     | LINKLIB MACRO * functions of the state of th |          |  |  |
| Dec 8                   | 113<br>114<br>115<br>116<br>117<br>118<br>120<br>121<br>123<br>124                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | - E-29 - |  |  |

```
Useful when a scratch register is available, and
list is known to contain at least one node.
 MOVE. I. IH TAIL+IM PRED (A0), A1
MOVE. I. IN PRED (A1), D0
BEQ.S. REMTAIL\@
MOVE. I. D0, IH TAIL+IM PRED (A0)
EXG. D0, A1
MOVE. I. A0, (A1)
ADDQ. I. #4, (A1)
 * head, node, scratchReg
 REMHEADQ -- remove-bead quickly
 (\2),\\3
\\3,(\1)
\1,ih_PRED(\3)
 MOVE.L AO, LN_PRED (A1)
Dec 8 16:41 1985 exec/lists.i Page 3
 ENDC !EXEC_LISTS_I
 MOVE.L
MOVE.L
MOVE.L
MOVE.L
 MACRO
 MACRO
 REMETEAD\@
ENDM
 REMIAIL\@
ENDM
 REMITEADO
 REMITAIL
```

```
IY MACRO * 11st, label
CMP.L IH_TAIL+LM_PRED(\1).\1
BEQ \2
ENDM
 * 11st, label
LH_TAIL+LN_PRED(\1).\1
\2
 LEA IH TAIL (AO), AO MOVE.L IN PRED (AO), DO MOVE.L A1, IN PRED (AO) MOVE.L DO, IN PRED (A1) MOVE.L DO, AO MOVE.L A1, (AO) ENDM
 HOYE.L. (A1), A0
HOYE.L. LW PRED (A1), A1
HOYE.L. A0, (A1)
HOYE.L. A1, LW PRED (A0)
ENDH
 ND MACRO
MOYE.L. (A0), D0
MOYE.L. A1, (A0)
MOYER.L. D0/A0, (A1)
MOYE.L. D0, A0
MOYE.L. A1, LN_PRED (A0)
ENDM
 MACRO * node, pred
MOVE.L LN_PRED(\1),\2
ENDM
 # node, next
(\1), \2
(\2)
Dec 8 16:41 1985 exec/lists.1 Page 2
 (A0), A1
(A1), D0
REMERAD\@
D0, (A0)
D0, A1
 IFNOTEMPTY MACRO
CMP.L LH
BNE \2
 E MACRO
MOVE.L
TST.L
ENDM
 MACRO
 MOVE.L
MOVE.L
BEQ.S
MOVE.L
EXG.L
 NEXTWODE
 REMERAD
 ADDRIEAD
 ADDITAIL.
 IEEMPTY.
 TSTNODE
 REMOVE
 PRED
```

| IFND EXEC_MEMORY_I  *********************************** | <b>"</b> !                                                                                                                | 1 646 ≟                                                                                                                                                                                                                                           |                                                        |                                           |                                                           |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------|-----------------------------------------------------------|
| PH X                                                    | Source Control:  \$Header: memory.1,v 1.0 85/08/28 15:12:02 carl Exp \$ \$Locker: \$ #################################### | Memory List Structures  A memory list appears in two forms: One is a the other is a list of already allocated memory the same, with the reqirements/address field position.  The format is a linked list of ML structures an array of ME entries. | E ML, LN. SIZE<br>ML, NUMENTRIES<br>ML, ME<br>ML, SIZE | ME_REÇS ME_RECS ME_ADOR ME_LENCIH ME_SIZE | memory options:<br>DEF NEW, PUBLIC, 0<br>DEF NEW, CHIP, 1 |
| IF<br>EXEC_M<br>************************************    | \$Header:<br>\$Locker:<br>IFND EXI<br>INCLUDE<br>ENDC 1EX                                                                 | Memory Li. A memory the other the same, position. The format an array of                                                                                                                                                                          | STRUCTURE<br>UWORD<br>LABEL<br>LABEL                   | STRUCTURE LABEL APTR ULONG LABEL          | BITDEF<br>BITDEF                                          |

| · |
|---|
|---|

| 1 | 49 50 * PutMsg actions: 51 52 PA_SIGNAL EQU 0 53 PA_SOFTINT EQU 1 54 PA_SOFTINT EQU 1 |
|---|---------------------------------------------------------------------------------------|
|---|---------------------------------------------------------------------------------------|

| 25 | 1 IFND EXEC_NODES_I 2 EXEC_NODES_I SET 1 3 *********************************** | 7 ************************************ | 0 |  | 5. 4444844444444444444444444444444444444 | 9 * List Node Structure | 4 STRUCTURE LN, 0 5 APTR LN_SUCC 6 APTR LN_FRED 7 UBYTE LN_FRED 8 BYTE LN_FRI 9 APTR LN_NAME 10 LABEL LN_SIZE | * | NT_UNKNOMN EQU NT_INTERRUPT EQU NT_DEVICE EQU NT_MESTORE EQU | NT MESSACE NT FREENSC NT REPLYMSC NT RESOURCE NT TITORADY | NI_LIBRANI EQU NI_SOFTINT EQU NI_FONT EQU NI_FROCESS EQU NI_SEMAPHORE EQU | ENDC !EXEC_N |
|----|--------------------------------------------------------------------------------|----------------------------------------|---|--|------------------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------|---|--------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------|--------------|
|----|--------------------------------------------------------------------------------|----------------------------------------|---|--|------------------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------|---|--------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------|--------------|

EXEC\_RESIDENT\_I SET 1 \* Commodore-Amiga, Inc. -- ROM Operating System Executive Include File \$Header: resident.1,v 1.0 85/08/28 15:13:41 carl Exp \$ word to match pointer to structure base address to continue scan \* field position in RT\_FLAGS
\* never ever init
\* init at coldstart time release version number type of module initialization priority pointer to node name pointer to init code pointer to init code \* RT\_INIT points to data \* (ILLECAL instruction) various tag flags \*----- RI\_FLACS bit and field definitions: 8 16:42 1985 exec/resident.1 Page 1 \*----- Match word definition: \$4AFC IFND EXEC RESIDENT I BITDEF RT, COLDSTART, 0
BITDEF RT, AUTOINIT, 7 ENDC !EXEC\_RESIDENT\_I \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* STRUCTURE RT, 0
UWORD RT\_MATCHEORD
APTR RT\_MATCHTAC
APTR RT\_HOSKIP
UBYTE RT\_FLACS
UBYTE RT\_YPE
UBYTE RT\_YPE
BYTE RT\_YPE
APTR RT\_INSME
APTR RT\_INSTRINC
APTR RT\_INSTRINC
APTR RT\_INSTRINC
APTR RT\_INSTRINC
APTR RT\_INSTRINC
APTR RT\_INSTRINC
APTR RT\_INSTRINC Resident Module Tag Source Control: \* Compatibility:
RIM\_WHEN EQU
RIW\_NEVER EQU
RIW\_COLDSTART EQU RIC\_MAICHMORD EQU \$Locker: \$ 

| 1985 exec/ports.1 Page 2 | Message Structure    | MN, LN_SIZE * message reply port<br>MN_LENGTH * message len in bytes<br>MN_SIZE ** | Semaphore Message Port | CTURE SH.MP_SIZE ************************************ | unions: | EXEC_POR   |       |
|--------------------------|----------------------|------------------------------------------------------------------------------------|------------------------|-------------------------------------------------------|---------|------------|-------|
| 8 16:42 1985 exec        | Message Str          | STRUCTURE MN. APTR MN. UMORD MAL LABEL MN.                                         | Semaphore M            | STRUCTURE SM,<br>MORD SM<br>LABEL SM                  | unitons | ENDC IEXEC |       |
| pec 8 16:                | 8 6 6 6<br>8 6 6 6 6 |                                                                                    | 22728                  | -                                                     |         |            | ·<br> |

DEC. 6 16:42 1965 cases/str.lings.1 Page 2

57 STRIMER PACES
58 DC:B 13.10
59 DC:B 7.1
61 CMOP 0.2
63 END. IEREC\_STRIMES\_I

| 11 |
|----|
|----|

; pre-allocated signals
; pre-allocated traps TS\_INVALID+1
TS\_ADDED+1
TS\_RUN+1
TS\_READY+1
TS\_WAIT+1
TS\_EXCEPT+1 exec/tasks.1 Page 2 \*----- System Task Signals: \$0FFFF \$08000 T, PROCTIME, 0
T, STACKCHK, 4
T, EXCEPT, 5
T, SWITCH, 6
T, LAUNCH, 7 \$0001 \$0002 \$0010 \$0100 ENDC !EXEC\_TASKS\_I States: \*----- Flag Bits: SYS\_IGALLOC EQU SYS\_IRAPALLOC EQU 22222222 4----- Task TS\_INVALID
TS\_ADDED SIGE\_ABORT SIGE\_CHILD SIGE\_BLIT SIGE\_DOS SIGB\_CHILD SIGB\_CHILD SIGB\_BLIT SIGB\_DOS BITDEF BITDEF BITDEF BITDEF TS\_RUN
TS\_READY
TS\_WALT
TS\_EXCEPT
TS\_REMOVED Dec 8 16:42 1985 BITDEF 

EXEC\_TASKS\_I SET 1 -- ROM Operating System Executive Include File sigs allocated
sigs we are waiting for
sigs we have received
sigs we take as exceptions
traps allocated
traps enabled
data for except proc
exception procedure
data for proc trap proc
proc trap procedure
stack pointer
stack wiper bound + 2 task disabled nesting intr disabled nesting \$Header: tasks.1,v 1.0 85/08/28 15:14:32 carl Exp \$ task getting CPU allocated memory task losing CPU TC\_MEMENTRY, LH\_SIZE TC\_Userdata TC\_SIZE 8 16:42 1985 exec/tasks.1 Page 1 IFND EXEC\_NODES\_I INCLUDE "exec/nodes.1" ENDC !EXEC\_NODES\_I IFND EXEC\_LISTS\_I INCLUDE "exec/lists.i" ENDC !EXEC\_LISTS\_I Task Control Structure TC\_EXCEPTIDATA
TC\_EXCEPTODE TC\_IDNESTONT
TC\_IDNESTONT TC\_SICEXCEPT TC\_TRAPALLOC TC\_TRAPABLE TC\_SIGNALT
TC\_SIGNECVD TC\_TRAPIATA
TC\_TRAPCODE
TC\_SPREG
TC\_SPLOWER
TC\_SPUPPER
TC\_SWITCH Commodore-Amiga, Inc. TC\_SIGALLOC IC, LN SIZE IFND EXEC\_TASKS\_I TC\_LAUNCH IC FLACS IC\_STATE Source Control: \$Locker: STRUCT APTR LABEL STRUCTURE ULONG UBYTE BYTE BYTE 8

| 51 SHORT MACRO                                                                                             | ENDM SHORT MACRO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | UMORD \1 SOFFSET                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1 WORD MACRO 42 \1 EQU SOFFSET 43 SOFFSET SET SOFFSET+2 44 ENDM                                                                                                                                                                                                      | * M                                                                                                                                                                                                                                                                                       | 13 * \$Locker: \$<br>14 *<br>15 **********************************                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 10 *<br>11 * \$Header: types.1,v 1.2 85/11/15 17:44:08 carl Exp \$<br>12 *                         | 8 * Source Control:                                                                                  |
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| MORD MACRO  \[ \frac{1}{1} & EQU \] SOFFSET SET ENDM  UMORD MACRO \[ \frac{1}{1} & EQU \] SOFFSET SET ENDM | WORD MACRO  \( \) EQU SOFFSET SET ENDM UMORD MACRO \( \) EQU SOFFSET SET                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | WORD MACRO \1 EQU SOFFSET SET ENDM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                      | 21 STRUCTURE MACRO 22 \( \) SET \( \) \( \) \( \) tor assembler's sake 23 SOFFSET SET \( \) \( \) \( \) \( \) ENDM 24 ENDM 25 BOOL MACRO 27 \( \) \( \) EQU SOFFSET 29 SOFFSET SET SOFFSET 30 SOFFSET SET SOFFSET 31 BYTE MACRO 32 \( \) \( \) EQU SOFFSET 33 SOFFSET SET SOFFSET 34 ENDM | NACRO   LAO\1   REF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0 * * * * M                                                                                        | * * * * * * H N/N D/N D/N                                                                            |
| UBYTE MACRO  \( \begin{array}{cccccccccccccccccccccccccccccccccccc                                         | UBYTE MACRO  \( \) 1 EQU SOFFSET SET ENDM WORD MACRO \( \) 1 EQU SOFFSET SET ENDM UMORD MACRO \( \) 1 EQU SOFFSET SET ENDM UMORD MACRO \( \) 1 EQU SOFFSET SET                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | UBYTE MACRO \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | UBYTE MACRO \1 EQU SOFFSET SET ENDM                                                                                                                                                                                                                                  | STRUCTURE MACRO \( \) SET 0 * SOFFSET SET \( \) 2 ENDM  BOOL MACRO \( \) EQU SOFFSET \( \) 2 SOFFSET SET SOFFSET SOFFSET SEUDM                                                                                                                                                            | STRUCTURE   MACRO   XREF   LVO\1   ENDM   STRUCTURE   MACRO   \( \frac{1}{2} \) SOFFSET   \( \frac{2}{2} \) SOFFSET   SET   \( \frac{2}{2} \) SOFFSET   SO | 0 W W W W W W W W W W W W W W W W W W W                                                            | * * * * * * * M N/N M/N                                                                              |
| BYTE MACRO  \( \begin{array}{cccccccccccccccccccccccccccccccccccc                                          | BYTE MACRO  \( \) \( \) SOFFSET SET  SOFFSET SET  BNDM  UBYTE MACRO  \( \) \( \) EQU  SOFFSET SET  SOFFSET  SOFFSET SET  SOFFSET  SOFFSE       | BYTE MACRO  \[ \begin{array}{cccccccccccccccccccccccccccccccccccc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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                                                                                                   | EXTERN_LIB MACRO XREF ENDM STRUCTURE MACRO \1 SET 0 * SOFFSET SET \2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1 * * * M 0 / 0                                                                                    | * * * * * * M N N N                                                                                  |
| BOOL MACRO  \( \begin{array}{cccccccccccccccccccccccccccccccccccc                                          | BOOL MACRO  \(1\) EQU SOFFSET SET ENDM  BYTE NACRO \(1\) EQU SOFFSET SET SOFFSET ENDM  UBYTE NACRO \(1\) EQU SOFFSET S       | MACRO   1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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                                                                                 | EXTERN_LIB MACRO XREF ENDM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            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| ******* N N/N D/N D/N D/N B/N 5/N                                                                          | ******* bl 0/0 0/0 0/0 5/0 3/0 5/0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| *********** 🖬 0/0 0/0 0/0 5/0 5/0                                                                          | **Source Control:  **Source Control:  **Source Control:  **Standar: \$  **Standar: \$  **Locker: \$  **Locker: \$  **Locker: \$  **Locker: \$  **TRUCTURE MACRO  \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( 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                                                                                         | * Commodore-Amiga, Inc ROM Operating System Executive Include ************************************                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | * Commodore-Amiga, Inc ROM Operating System Executive Include ************************************ | * * Commodore-Amiga, Inc ROM Operating System Executive Include ************************************ |
| ENDM                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | MACRO<br>EQU<br>SET                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | MACRO<br>EQU<br>SET<br>ENDM                                                                                                                                                                                                                                          | TERN_LIB MACRO XREF _LVO\1 ENDM                                                                                                                                                                                                                                                           | \$Locker: \$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | types.1,v 1.2 85/11/15 17:44:08 carl Exp                                                           | Source Control:                                                                                      |

1 GREEN GRANINGS CLIP.

2 Commodera-Major, Inc.

4 \* Commodera-Major, Inc.

5 \* Commodera-Major, Inc.

110 END GREEN GREEN GREEN

1111 END GREEN GREEN GREEN

1121 END GREEN GREEN

1132 END Inc.

1145 END Inc.

1150 INC.

67 ISLESSY equ 2 68 ISCRIRX equ 4 69 ISCRIRY equ 8 70 ENDC

```
/* s
 structure of oprlist that points to list that hardware actually execute STRUCTURE oprlist, 0
APIR crl. waxt
APIR crl. start
WORD crl. pax
 /* max # of copins for this block */
/* offset this copper list vertical waits */
 /* pseude opcode for move #XXXX,dir */
/* pseudo opcode for wait y.x */
/* continue processing with next buffer */.
/* copper instruction only for short frames */
/* copper instruction only for long frames */
 APTR cl_Matt: /* next block for this copper list */
APTR cl_Copist: /* system use */
APTR cl_Copist: /* system use */
APTR cl_Copist: /* intermediate ptr */
APTR cl_Copist: /* intermediate ptr */
APTR cl_Copistart: /* mrgcop fills this in for Long Frame*/
APTR cl_Copistart: /* mrgcop fills this in for Short Frame*/
WORD cl_Count: /* max * of copins for this block */
WORD cl_MaxCount: /* max * of copins for this block */
WORD cl_MaxCount: /* max * of copins for this block */
WORD cl_MaxCount: /* of feet this copper list vertical waits
 STRUCTURE UCopList, 0
APTR ucl_Mext;
APTR ucl_CopList; /* head node of this copper list */
APTR ucl_CopList; /* node in use */
LABEL ucl_SIZEOF
 copinit_diagstrt,8
copinit_sprstrtup,2*((2*8*2)+2+(2*2)+2)
copinit_sprstop,4
 * 0 = move, 1 = wait */
0 * UNION
 Commodore-Amiga, Inc.
Dec 8 16:42 1985 graphics/copper.1 Page 1
 private graphics data structure
STRUCTURE copinit.0
STRUCT copinit_diagstrt.8
STRUCT copinit_spratrtup.2*
STRUCT copinit_spratrup.2*
 clocode
CT cloxtlist,0
CT clowaitPos,0
CT clostAddr,2
 cl_BwaitPos,0
cl_DestData,2
 IFND CRAPHICS_COPPER_I
CRAPHICS_COPPER_I SET 1
 CopList, 0
 Copins, 0
 equ $8000
equ $4000
 APTR crl_start WORD crl_max LABEL crl_SIZEOF
 LABEL CL. SIZEOF
 COPPER_MAIT equ 1
CPRINTIBUE equ 2
 WORD C
STRUCT
STRUCT
STRUCT
 STRUCT
STRUCT
 STRUCTURE
 STRUCTURE
 GPR MT SHIT
 CPR NT LOF
```

8 16:42 1985 graphics/copper.1 Page 2 LABEL copinit\_SIZEOF ENDC 58 59 **D** 

\* Include defir \* bplcon0 defir MODE\_640 eq. PLNCNTMSK eq. \* bplconl define Pea Fine SCROLL PEB FINE SCROLL PE FINE SCROLL PLACATSHET equ COLORON equ DBLPF equ HOLORODIEY equ INTERLACE equ \* display wind DIW\_HORIZ\_POS DIW\_WRTCL\_POS DIW\_WRTCL\_POS\_ IFND GRAPH GRAPHICS DISPLA \* Data fetch DFTCH\_MASK \* vposr bits VPOSRLOE Dec 8 16:42 1985 gr \*\*\*\*\* \* 8-24-84 date ENDC - E-40 -

| ### Carphics_CELS_I_SET_I  ### Carphics_Library : Gals_D  ###  | aphics/display.i Page 1                                                   | Dec 8 16:42 1985 graphics/gels.i Page 1                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | HICS DISPLAY_I<br>LAY_I SET 1<br>y.1 ************************************ | IEN<br>CRAPHIC                                                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Commodore-Amiga, Inc.                                                     |                                                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Modification History or: Comments */                                      |                                                                                 |
| ######################################                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | added this header file                                                    | * VS_vSflags                                                                    |
| # BITDEF VS, VSPRITE, 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ************************                                                  | <pre>\$ : user-set vSprite flags - SUSERFIACS EQU \$00FF</pre> ;                |
| many bit planes? */ none, 1-56 = 1-56, 7 = reserved */ to abit for bplcon0 */ ble color burst */ ble                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ine file for display control registers */                                 | BITDEF VS. VSPRITE, 0 set BITDEF VS. SAVEBACK, 1 set BITTOFF VS. CAVERLAY 2 set |
| none, 1->6 = 1->6, /= reserved / 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                           | 17 BITDEE VS, WUSTDRAM, 3 ; set 1f vSpri                                        |
| ### ### ##############################                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | eserved,                                                                  | 19 BITDE VS. BACKSAVED. 8 ;                                                     |
| za rlace mode for 400 */ zb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <pre>* bplcon2 bit */ * disable color burst */</pre>                      | BITDEE VS, BOBUFLALE, 9  BITDEE VS, CELCONE, 10  BITTORE VS VSOVEPETOM 11       |
| ### 1940 #### 1940 ####################################                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                           | BILDE VS, vSovere con, 11                                                       |
| 27 BUSERFIAGS EQU \$00FF   mask of all u buser flag bits 28 BITDEF B.SAVEEDB, 0   set to not ear bits of all u buser set by the user flag bits 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                           | * B_flags                                                                       |
| 29 BIDDER B. BORLING, B. : et contains that start/stop */ 31 * ; - these are the system flag bits 32 BITDER B. BARATING, B. : set while bob 33 BITDER B. BORNAWY, 10 : set when bob 34 BITDER B. BORNAWY, 10 : set when bob 35 BITDER B. SANERESERVE, 12 : for back-rest when bob 36 BITDER B. SANERESERVE, 12 : for double-cl 37 38 * defines for the animation procedures 40 41 ANTRACSIZE EQU 6 41 ANTRACSIZE EQU 6 42 ANIHGALF EQU \$0001 44 45 * macros                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | &E                                                                        | * ; these are the user flag<br>BUSERFLACS EQU \$00FF<br>BITDEF B, SANEBOB,0     |
| BITDEF B, BWALTING, 6 ; set while bob     32                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 36                                                                        | BITOEF B, BOBLSCUMP, 1 ;  * ; these are the system fla                          |
| ## BITDEF B, BORNIX, 11 ; set when bood and both | Je f.1                                                                    | BITDEF B, BWAITING, 8 BITDEF B, BDRAWN, 9 BITDEF B, BORSWAY, 10                 |
| 36 BITDEF B, OUTSTEP, 13 ; for double-cl. 37 38 4 defines for the animation procedures 40 41 ANERACSIZE EQU 6 42 ANIMBALE EQU 80001 43 RINCTRIGGER EQU 80001 44 45 4 macros                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                           | BITDEF B, BOBNIX, 11 BITDEF B, SAVEPRESERVE, 12;                                |
| 39                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | start/stop horizontal position */                                         | BITDEF B, OUTSTEP, 13 ; for                                                     |
| 40 ANERACSIZE EQU 6 42 ANIMBALF EQU \$0020 43 RINCTRICGER EQU \$0001 44 45 * macros 46 * these are GEL functions that are currently 47 * definition. It should not be assumed that 48 49 InitAnimate MACRO * GanimKey 50 CIR.L \1 ENDM 52 ENDM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                           | *                                                                               |
| 41 ANERACSIZE EQU 6 42 ANIMHALE EQU \$0020 43 RINCTRICKER EQU \$0001 44 45 4 macros                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 000                                                                       | •                                                                               |
| * these are GEL functions that are currently definition. It should not be assumed that InitAnimate MACRO * & animKey GIR.L \1 ENDM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                           | ANERACSIZE EQU<br>ANIMENLE EQU<br>RINGIRIGGER EQU                               |
| InitAnimate MACRO<br>CLR.L \1<br>ENDM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                           | * these are GEL functions that * definition. It should not be                   |
| 52                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                           | Initanimate MACRO<br>CLR.L \1<br>ENDM                                           |
| 54 RemBob MACRO * 6b<br>55 CR.W # BE_BOBSAWAY, b_BobFlags+\1<br>56 ENDM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                           | RemBob MAC<br>OR.W<br>ENDM                                                      |

| ***CSTEM VARIABLES***  CEL Inhed list forward-backward pointers sorted by y,x value APTR vs_preavBrite : struct vSprite : pointer of overlay drawing APTR vs_preavBrite : struct vSprite: pointer of overlay drawing APTR vs_preavBrite : struct vSprite: pointer for overlay drawing APTR vs_preavBrite : struct vSprite: pointer for overlay drawing APTR vs_preavBrite : struct vSprite: pointer for overlay drawing APTR vs_preavBrite : struct vSprite: pointer for overlay drawing APTR vs_preavBrites : vSprite flags COMMAN WARELES vSprite flags USTR VARIABLES vSprite flags can collide with the vSprite bits vSprite is vSprite bits vSprite bits vSprite is vSprite bits vSprite solor definitions (not used by bobs)  APTR vs_brockerine vSprite of a bob buse except this is a matrix pointer to this vSprite and a bob buse except the bits be vSprite and the user intends on setting the vSprite and the user intends on setting the vSprite and be and the user for the vSprite and the user intends on setting the vSprite and vSprite and vSprite bits vSprit                                                                                          | <br>    |        | -          |           |          | n, them  |         | ישבי               | learing  | •          |          |           |         |            |          |          |         |      |          | <b>q</b>    | 발        |          |           |          | obs)           |        | te is    | lects    |         | onding<br>'s | <u> </u>    | how .    |              | Set       | for     |         |               |          |        |   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------|------------|-----------|----------|----------|---------|--------------------|----------|------------|----------|-----------|---------|------------|----------|----------|---------|------|----------|-------------|----------|----------|-----------|----------|----------------|--------|----------|----------|---------|--------------|-------------|----------|--------------|-----------|---------|---------|---------------|----------|--------|---|
| UCTURE VS, 0; vSprite  SYSTEM VARIABLES  GEL linked list forward/back APTR vs_PrevVSprite  GEL faw list constructed in  GEL faw list constructed in  GEL faw list constructed in  GEL aw list constructed in  APTR vs_ClearPath  Sprite positions are desorting easier, since (y,x)  WORD vs_Oldy  vs_Oldy  vs_Oldy  vs_VSFlags  COMMON VARIABLES  the vSprite positions are deasier, since (y,x) as a low  WORD vs_Haldh  Vs_Hithask  APTR vs_CollMask  MORD vs_Hithask  MOR |         |        | 9          |           |          | lly draw |         | merlay da          | verlay o | orting     |          |           |         |            | sorting  | )        |         |      | ge data  | hie ven     | ollide t | _        | 9         | te bits  | sed by b       |        | is vSpri | r bit se |         | (corresp     | 7<br>5<br>8 | descr1be | م ده         | must be   | r wants |         |               |          |        |   |
| UCTURE VS, 0; vSprite  SYSTEM VARIABLES  GEL linked list forward/back APTR vs_PrevVSprite  GEL faw list constructed in  GEL faw list constructed in  GEL faw list constructed in  GEL aw list constructed in  APTR vs_ClearPath  Sprite positions are desorting easier, since (y,x)  WORD vs_Oldy  vs_Oldy  vs_Oldy  vs_VSFlags  COMMON VARIABLES  the vSprite positions are deasier, since (y,x) as a low  WORD vs_Haldh  Vs_Hithask  APTR vs_CollMask  MORD vs_Hithask  MOR |         |        | :          | y , y , y |          | e actual |         | ton<br>er of o     | er for c | o make s   |          |           |         |            | to make  |          |         |      | w of ima | ta<br>Vitio | te can   | te image | on of ed  | 11 vSpri | a except       |        | ne if th | ge, clea | 417     | ols bit      | j           | e flags  | oor into     | ser ince  | the use |         |               |          |        |   |
| UCTURE VS, 0; vSprite  SYSTEM VARIABLES  GEL linked list forward/back APTR vs_PrevVSprite  GEL faw list constructed in  GEL faw list constructed in  GEL faw list constructed in  GEL aw list constructed in  APTR vs_ClearPath  Sprite positions are desorting easier, since (y,x)  WORD vs_Oldy  vs_Oldy  vs_Oldy  vs_VSFlags  COMMON VARIABLES  the vSprite positions are deasier, since (y,x) as a low  WORD vs_Haldh  Vs_Hithask  APTR vs_CollMask  MORD vs_Hithask  MOR |         |        | 4          |           |          | bobs ar  |         | detect             | point    | order t    | <b>.</b> | <b>E</b>  |         |            | order    |          |         |      | per ro   | s of day    | s vSpr1  | o vSpr1  | detection | OR of a  | inition        |        | ints hor | rom imac | 1       | lame, t      | 3           | b, thesa | 1017<br>1017 | te the    | gisters |         |               |          |        |   |
| UCTURE VS, 0; vSprite  SYSTEM VARIABLES  GEL linked list forward/back APTR vs_PrevVSprite  GEL faw list constructed in  GEL faw list constructed in  GEL faw list constructed in  GEL aw list constructed in  APTR vs_ClearPath  Sprite positions are desorting easier, since (y,x)  WORD vs_Oldy  vs_Oldy  vs_Oldy  vs_VSFlags  COMMON VARIABLES  the vSprite positions are deasier, since (y,x) as a low  WORD vs_Haldh  Vs_Hithask  APTR vs_CollMask  MORD vs_Hithask  MOR |         |        | 1          | vSortte   | vSprite  | er the   | •       | oundary<br>«Sprite | vSprite  | (y,x)      | g integ  | positi    |         | flags      | n (y, x) |          | osition |      | f words  | f plane     | pes thi  | inter t  | liston    | ogical   | lor def        |        | bob: po  | plane f  | ane     | fill p       |             | of a bo  | into men     | s vSort   | olor re |         |               | Inable   |        |   |
| UCTURE VS, 0; vSprite  SYSTEM VARIABLES  GEL linked list forward/back APTR vs_PrevVSprite  GEL faw list constructed in  GEL faw list constructed in  GEL faw list constructed in  GEL aw list constructed in  APTR vs_ClearPath  Sprite positions are desorting easier, since (y,x)  WORD vs_Oldy  vs_Oldy  vs_Oldy  vs_VSFlags  COMMON VARIABLES  the vSprite positions are deasier, since (y,x) as a low  WORD vs_Haldh  Vs_Hithask  APTR vs_CollMask  MORD vs_Hithask  MOR | !       |        | 4          |           | struct * | the ord  | •       | system b           | itruct * | fined in   | is a lon | orev 10us |         | Sprite     | fined 1  | ng integ | creen p |      | umber o  | number o    | mich ty  | WORD po  | fast col  | WORD: 1  | Te's S         | WORD   | itruct * | ects a   | that pl | mask to      | flags:      | Sprite   | drawn        | ple vap   | which c |         |               | user def |        |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         | rite   |            |           |          | cted in  | ar list | te for a           |          | are de     | (x,x)    | • • • •   |         |            | s are de | as a lor | ••      |      |          |             |          |          | e-dimens  | •••      | le venr        |        | •••      | bit se   | ask for | Shadow       | or these    | is the   | is to be     | DRAW fla  | escribe | 6       |               |          |        |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |        | BLES       | Van t     | WSpr1t   | construc | to cle  | νSpr1              | arPath   | sitions    | , since  |           | ABLES - | lags<br>FC | sition   | (χ'χ)    |         | aht. | ម        | ម្          | fask     | peData   | tts us    |          | IMASK          | Colors | ą        |          | m wober | f using      | uses for    | f this   | dod ec       |           | o to    | De imag | Decroy of the | arExt    | e<br>G |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | : vSori | VS,0   | EM VARI    | Ked 118   | vs Pre   | w list   | copied  | here in            | vs Cle   | rite po    | easter   | vs Old    | ON VARI | VS_VSE     | crite p  | , since  | X       | vs_X | VS Wid   | VS Dep      | vs Hit   | vs_Ima   | une is    | vs_Bor   | VS_COL         | vs_Spr | vs_VSB   | ick fla  | 88 of S | flag: 1      | are two     | ٠-i :    | φ.<br>1      | -1 ∓<br>1 | Ų.      | 5 Œ     | vs Plan       | vs_SUs   | vs_SIZ |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         | UCTURE | SYSI       | APTR      | APTR     | CEL dra  | list is | must be            | APTR     | the vSp    | sorting  |           |         | WORD       | the vS   | oaster   |         |      | WORD     |             |          | APTR     | the vS    | APTR     | APIK<br>metriv | APTR   | APIR     | planeP   | 3,0     | onoff.       | There       |          |              |           |         | CHANGE  |               | LABEL    | LABEL  | Ş |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | +       | SIR    | <b>«</b> • |           |          | *        | •       | 42                 |          | <b>4</b> 5 | •        |           | *       | •          |          | •        |         |      |          |             |          | •        | . 41      |          | ⋴              |        |          | ą        | •       | u <b>4</b>   | •           |          |              | . 4       | æ       | 4       |               |          |        | • |

|    | Dec 8            | 8 16:42 1985    | graphics/gels.i Page 3                               | E. B.                                                                                                                               |
|----|------------------|-----------------|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
|    | 113              | STR             | UCTURE BOB, 0 ; bob: blitter object COMMON VARIABLES | litter object                                                                                                                       |
|    | 115              |                 | bob_SavePlanes                                       | : * *WORD for each plane in RestPort                                                                                                |
|    | 116              | -               | bob_BobFlags                                         |                                                                                                                                     |
|    | 116              | APTE            | VARIABLES                                            |                                                                                                                                     |
|    | 119              | •               | sed by bobs for "co                                  | tan bob_bayebuiter ; "McKul pointer to the builter for background<br>Save used by bobs for "cookie-cutting" and multi-plane masking |
| _  | 120              | APTR            | bob_ImageShadow                                      | ; *WORD                                                                                                                             |
|    | 121              | * pointe        | r to BOBs for seque                                  | pointer to BOBs for sequenced drawing of bobs                                                                                       |
|    | 123              | APIR            | correct overlaying bob Before                        | for correct overlaying of multiple component animations  R bob Before                                                               |
| Бu | 124              | !               |                                                      | to by before                                                                                                                        |
|    | 125              | APTR            | bob_After                                            | ; struct *bob: draw this bob after bob pointed                                                                                      |
|    | 127              | APTR            | bob BobVSprite                                       | ; to by after<br>: struct "vSorite: this boh's vSorite definiti                                                                     |
|    | 128              | APTR            | bob BobComp                                          | ; struct *animComp: pointer to this bob's                                                                                           |
|    | 129              | ADTO            | hoh DB: 6feer                                        | ; animComp def                                                                                                                      |
|    | 131              | ¥1.54           | pop man ider                                         | ; struct dbulPacket: pointer to this bob's                                                                                          |
|    | 132              | LABEL           | bob_BUserExt                                         | bob user extension                                                                                                                  |
|    | 34               | LABEL           | Dob_S12EOF                                           |                                                                                                                                     |
|    | 135              | # AC            | : animComp                                           |                                                                                                                                     |
|    | 136              |                 |                                                      |                                                                                                                                     |
|    | 137              | STRUCTURE       | TURE AC, 0 ; enimComp                                |                                                                                                                                     |
|    | 2 5              |                 | ON VARIABLES                                         |                                                                                                                                     |
|    | 140              | * + 1 morr      | timer defines how long to been this                  | ; animicano flags for system & user                                                                                                 |
|    | 141              | 11 34           | et non-zero, timer (                                 | if set non-zero, timer decrements to zero then suitches to soutes.                                                                  |
|    | 142              | # 1f set        | et to zero, animCom                                  | animComo never switches                                                                                                             |
|    | 143              | MORD            | ac_Timer                                             |                                                                                                                                     |
|    | # :              | * USER          | USER VARIABLES                                       |                                                                                                                                     |
|    | 5 <del>1</del> 5 | * initial       | l value for timer wi                                 | initial value for times when the animComp is activated by the system                                                                |
|    | 147              | * notater       |                                                      | to part and provious components of animals of animals of                                                                            |
|    | 148              | APIR            |                                                      | struct *animComp                                                                                                                    |
|    | 149              | APTR            | ac_PrevComp                                          | struct animComp                                                                                                                     |
|    | 120              | * pointer       |                                                      |                                                                                                                                     |
| ,  | 127              | APTR<br>APTR    | ac_NextSeq                                           |                                                                                                                                     |
|    | 153              | APTR            | ac Anim Courtine                                     | . struct "animoomp".                                                                                                                |
|    | 154              | WORD            | ac_YTrans                                            | initial y translation (if this is a component                                                                                       |
|    | 155              | MORD<br>I       | ac_XTrans                                            | _                                                                                                                                   |
|    | 5 5              | APTR<br>APTR    | ac_HeadOb                                            |                                                                                                                                     |
| _  | 158              | LABEL           | ac SIZE                                              | מכו בסס                                                                                                                             |
|    | 159              |                 |                                                      |                                                                                                                                     |
|    | 160              | * AO :          | : animOb                                             |                                                                                                                                     |
|    | 101              | STELL THE TOTAL |                                                      |                                                                                                                                     |
|    | 163              | * SYSTE         | SYSTEM VARIABLES                                     |                                                                                                                                     |
|    | 164              | APTR            | ao_NextOb                                            | struct *animOb                                                                                                                      |
|    | 165              | APTR            | ao Prevôb                                            | struct *animOb                                                                                                                      |
|    | 167              |                 | or calls to Animate<br>ao Clock                      | of calls to Animate this animoo has endured as Clock                                                                                |
|    | 168              | MORD            | ao_AnOldY ;                                          | old y,x coordinates                                                                                                                 |
|    |                  |                 |                                                      |                                                                                                                                     |

| : *                                     | * * *                     | * *                                    |          |                                         |                                                                                               |                                                              |      |   |
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| *                                       |                           |                                        |          |                                         |                                                                                               |                                                              |      |   |
| i                                       |                           | •                                      |          |                                         |                                                                                               |                                                              |      |   |
|                                         | Inc.                      | •                                      |          |                                         |                                                                                               |                                                              |      |   |
| *                                       | a,<br>II                  | *                                      |          |                                         |                                                                                               |                                                              |      |   |
| * * * *                                 | Amig                      | :                                      |          |                                         | _                                                                                             |                                                              |      | • |
| *                                       | Commodore-Amiga,<br>gfx.1 | ************************************** | }        |                                         | E BitMap, 0 bm_BytesPerRow bm_Rows bm_Flags bm_Flags bm_Depth bm_Pad bm_Planes, 8*4 bm_SIZEOF | Rectangle, 0<br>MinX<br>MinX<br>MaxX<br>MaxX<br>MaxY         |      |   |
| i                                       | Commo<br>gfx.1            |                                        | SET 1    | \$8000<br>0<br>1<br>1                   | E BitMap, 0 bm_BytesPerRot bm_Rows bm_Flags bm_Depth bm_Depth bm_Planes, 8*4 bm_SIZEOF        | Rectanger and Mink ra Mink ra Maxk ra Maxk ra Maxk ra Sizeof |      |   |
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| * * *                                   |                           | * 6                                    |          | H 44 19                                 | STRUCTI<br>WORD<br>WORD<br>BYTE<br>BYTE<br>WORD<br>STRUCT                                     | STRUCTURE WORD WORD WORD WORD TABEL                          | ENDC |   |
| **                                      |                           | *                                      | CRAPHICS | BITSET<br>BITCLR<br>ACNUS<br>DENISE     |                                                                                               | E 3                                                          | щ    |   |
|                                         | 1 M 4                     | <br>                                   | _        | • • • • • • • • • • • • • • • • • • • • | 112<br>113<br>113<br>22<br>23                                                                 | 222222                                                       | 3.5  |   |
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graphics/gfxbase.i Page 2 equ 1<<QBOMNERn 8 16:42 1985 ENDC **QBOMNER** 528 29 **D6**C

struct \*copinit ; ptr to copper start up list for 6526 resource use for blitter resource use \* bits for dalestuff, which may go away when blitter becomes a resource OWNBLITTERn equ 0 \* blitter owned bit QBOWNERn equ 1 \* blitter owned by blit queuer sseese gfxbaso.1 statestatestatestatestates ; 8 bytes reserved for future use current copper list being run current copper list being run struct \*bltnode ; copy of bltcon0 struct \*View Dec 8 16:42 1985 graphics/gfxbase.i Page 1 Commodore-Amiga, Inc 9b\_Flags 9b\_BlitLock 9b\_BlitWesttO.IH\_SIZE 9b\_BlitOmer 9b\_TOE\_WaitQ.IH\_SIZE 9b\_DisplayFlags do\_timsrv, IS\_SIZE do\_bitsrv, IS\_SIZE do\_TextFonts, IH\_SIZE do\_DefaultFont 'exec/interrupts.1' db. Modes
db. VBlank
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CRAPHICS\_CEXBASE\_I SET 1 'exec/libraries.1' EXEC\_INTERRUPTS\_I gb\_vbsrv, IS\_SIZE GfxBase, LIB\_SIZE EXEC LIBRARIES I include 'exec/lists.1' ENDC IFND EXEC\_LIBRARIES gb\_reserved, 8 gb\_SIZE EXEC\_LISTS\_I do Actiview de babithd do blitter do\_copinit do SHF11st do\_bithd \$ bitti include ' ENDC Include MORD MORD STRUCT APTR STRUCT WORD STRUCT LABEL STRUCTURE ENDC 

draw the first dot of this line?
use one dot mode for drawing lines
flag set when RastPorts are double-buffered
(only used for bobs)
used by areafiller
used by areafiller # flag of which sprites to reserve from
# vsprite system gifiags \* reserved for system use gl\_gelHead \* dwmmy vSprites for list management to array of 8 WCRDS for sprite available lines gl\_nextLine; to array of 8 pointers for color-last-assigned to vSprites gl\_lastColor; gl\_collHandler \* addresses of collision routines gl\_leftmost ; inverse video for drawing modes \* system use only \* \*WORD 8 16:42 1985 graphics/rastport.i Page 1 Commodore-Amiga, Inc. IFND GRAPHICS\_RASTPORT\_I
GRAPHICS\_RASTPORT\_I SET 1 include 'graphics/gfx.1' gl\_topmost gl\_bottommost gl\_firstBlissObj gl\_lastBlissObj gl\_SIZEOF RP, AREACUTLINE, 3 RP, NOCROSSFILL, 5 RP, FRST\_DOT, 0 RP, ONE\_DOT, 1 RP, DBUFFER, 2 CRAPHICS CEX I GelsInfo, 0 gi\_rightmost \*---- RP\_TXFlags -----BITDEF RP, TXSCALE, 0 gl\_sprRsrvd \*----- TR : TmpRas ---ImpRas, 0 tr\_RasPtr tr\_Size tr\_SizEOF 0 1 2 4 0 1 2 4 \*----- RP\_DrawMode --- CelsInfo --- RP\_Flags RP\_JAM2 RP\_COMPLEMENT STRUCTURE RP\_INVERSVID STRUCTURE
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| 1 * Commodore-Amiga, Inc. 3 * layers.1 | 4 " 5 IFND GRAPHICS_LAYERS_I 6 GRAPHICS_LAYERS_I SET 1 | 8 IFND EXEC_PORTS_I 9 include 'exec/ports.1' 10 ENDC | 11 IFND EXEC_LISTS_I 13 include 'exec/lists.1' 14 ENDC | 16 STRUCTURE LayerInfo_extra,0 17 STRUCT 11e_mem,LH_SIZE 19 APTR 11e_freeClipRects 20 APTR 11e_blitbuff 21 LABEL 11e_SIZECE | 23 LPN REGION equ -1 | 24 STRUCTURE men_node,0 25 AFTR mennode_succ 27 AFTR mennode_pred 28 AFTR mennode_where 29 LONC mennode_how_big 30 LABEL mennode_SIZEOF |       | STRUCT<br>BYTE<br>BYTE<br>BYTE | BYTE<br>APTR<br>STRUCT | STRUCT<br>STRUCT<br>APTR | 47 LABEL 11_SIZEOF<br>48 NEWLAYERINFO_CALLED equ 1 | 51 ENDC |
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| graphics/rastport.1 Page | RastPort, 0 rp_Layer rp_BitMap rp_NeasPtrn rp_ImpRas rp_MeasPtrn rp_ImpRas rp_MeasPtrn rp_BgPen rp_BgPen rp_BgPen rp_BgPen rp_BgPen rp_BgPen rp_AVGPen rp_AVGPen rp_Limptcnt rp_Rule rp_Ru |   |
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| -   |             | Commodore-Amiga,                 | a, Inc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| •   | BITDEF      | FS EXTRINDED 3                   | , not man text (no sey is a cut bourds set)<br>.extended face (mist be designed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| -   | Fort Font   | nt Flags                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|     | BITDEF      | EP, ROMEONT, 0                   | font is in rom                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|     | BITUEE      | FP, DISKEONI, 1                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|     | DI IDEE     | EP, KEVFAIR, 2                   | designed parn is reversed (e.g. leit)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|     | RITTOFF     | FP WINFIDM 4                     | designed for lives non-incertaced                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|     | BITDEF      | FP PROPORTIONAL S                | character sizes can vary from nominal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|     | BITDEE      | FP. DESIGNED, 6                  | :size is "designed". not constructed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|     | BITDEF      | FP. REMOVED. 7                   | the fort has been removed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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|     | STRUCTURE   | TextAttr,0                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|     | APTR        | ta Name                          | the desired                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|     | CMOKI       | ta_YSize                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|     | UBYTE       | ta_Style                         | desired font style                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|     | UBYTE       | taFlags                          | ; font preferences                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|     | TABET.      | ta_SIZEOF                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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|     | STRIKTHRE   | TaxtFont MN STZF                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 7   |             |                                  | font name in I.N \ used in this                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|     | UMORD       | tf YSize                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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|     | UBYTE       | tf Flags                         | erence attributes / request.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|     | UMORD       | tf XSize                         | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|     | UMORD       | tf Baseline                      | distance from the top of char to baseline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|     | UMORD       | tf_BoldSmear                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| IEND GRAPHICS_SPRITE_I  *********************************** | SimpleSprite, 0 ss_posctidata ss_beight ss_x ss_y ss_num ss_SIZEOF |  |
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| 1985 graphics/view.i Page i | IFND CRAPHICS_VIEW_I  *********************************** | TRAN EQU \$40  UNLE EQU \$400  URES EQU \$400  AGE EQU \$400  FRITES EQU \$400  LOCK_VIDEO EQU \$4000  LOCK_VIDEO EQU \$4000  BYTE CALTYPE  WRD CALCOURT  LABEL CALCOURT  LONG VP_COLOTABLE  CONG VP_COLOTABLE  CONG VP_COLOTABLE  CONG VP_COLOTABLE  CONG VP_COLOTABLE  CONG VP_COLOTABLE  CONG VP_DESIDES  C |
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| graphics/text.1 Page 2 | tf_HiChar ; the last character described here tf_CharData ; the bit character data tf_Modulo ; the row modulo for the strike font data tf_Charloc ; ptr to location data for the strike font ; 2 words: bit offset then size tf_CharSpace ; ptr to words of proportional spacing data tf_CharKern ; ptr to words of kerning data tf_SIZEOF |          |  |
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| graphics/tex           | tf HiChar<br>tf Charbata<br>tf Charloc<br>; 2 words:<br>tf CharSpac<br>tf CharKern<br>tf SIZEOF                                                                                                                                                                                                                                            |          |  |
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enable GCR Only) sync on MSB for reading
1 -> 2 us/bit (mfm), 2 -> 4 us/bit (gcr)
use aud chan 3 to modulate period of 3?
use aud chan 1 to modulate period of 3
use aud chan 1 to modulate period of 1
use aud chan 3 to modulate period of 1
use aud chan 3 to modulate volume of 7;
use aud chan 1 to modulate volume of 3;
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16:42 1985 hardware/addbits.i Page 1
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ADKE_PRE140NS
ADKE_PRE280NS
ADKE_PRE560NS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADKE_PRECOMP1
ADKE_PRECOMP1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ADKE - WORDSYNC
ADKE - FAST
ADKE - JESSTNC
ADKE - USE 291
ADKE - USE 292
ADKE - USE 293
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ADKB_PRECOMPO
ADKB_PRECOMPO
ADKB_MEMPREC
ADKB_MEMPREC
ADKB_URETTRRK
ADKB_USESTNC
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ADKB_USESTN
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                                                                                                                                                                                                                                                                                                 $Locker:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ENDC
                                                                                                                                                                                                                                                                                                                                                     œ
                                                                                                                                                      6459789
               Dec
```

Dec 8 16:42 1985 graphics/view.1 Page 2

S7 LABEL qp\_SIZEOF
S9 STRUCTURE Reainfo,0
61 ATR r1\_Bette
62 LONG r1\_Bette
63 WRD r1\_ByOffset
64 WRD r1\_ByOffset
65 LABEL r1\_SIZEOF
66 SIMCCOMPANION
11\_ByOffset
66 SIMCOMPANION
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69 SIMCOMPANION
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69 SIMCOMPANION
11\_ByOffset
69 SIMCOMPANION
11\_ByOffset
60 SIMCOMPANION
11\_ByOff

```
12 /* bits to right align ashift value */
12 /* bits to right align bshift value */
                                                                      * definations for blitter control register 1 */
TINEMODE equ $1
B FILL_OR equ $8
9 FILL_XOR equ $4
0 FILL_XOR equ $4
1 ONEDOT equ $2
2 OVELAG equ $20
3 SIGNELAG equ $4
8.1TREVERSE equ $2
8 16:42 1985 hardware/blit.i Page 2
                                                                                                                                                                                                              HARDWARE_BLIT_I
                         $100
$200
$400
$800
                                                                                                                                  $10
$8
$4
                                                    ASHIFTSHIFT equ
                                                          BSHIFTSHIFT equ
                                                                                                                                   2 2 2
2 2 3 3
                                                                                                                                                          OCTANTS
OCTANTS
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OCTANTS
                                                                                                                                                                                                              ENDC
                        DEST
SRCC
SRCB
SRCB
                                                                                                                                  SB
                  80
```

```
$Header: blit.i,v 27.1 85/06/24 14:42:42 neil Exp
                                                                                                                                                                                                   * definitions for blitter control register 0 */
                                                                                                                                                                          /* 2^6 -- 1 */
/* 2^10 - 1 */
                                                                                                                                     * bit defines used by blit queuer
CLEANMEn equ 6
CLEANME equ 1<<CLEANMEn
8 16:42 1985 hardware/blit.1 Page 1
                                                                                                                                                                    16-HSI ZEBITS
                                                                                                                                                          * include file for blitter */
                                                                  IFND HARDWARE_BLIT_I
HARDWARE_BLIT_I
SET 1
                                                                                                                                                                                         MAXBYTESPERROW EQU 128
                   * Commodore-Amiga, Inc.
                                                                                 STRUCTURE bltnode, 0
                                                                                                                                                                                                                                                                            $100
$200
$400
$800
                                                                                       bn_n
bn_function
bn_stat
bn_dummy
bn_blitsize
                                                                                                                                                                                                               $80
$40
$20
$10
$8
$4
                                                                                                                 bn_beamsync
bn_cleanup
bn_SIZEOF
                                                                                                                                                                7 7 7 7
                                                                                                                                                                                                                                                                                                            D
D
                                                                                                                                                                                                               *********
                                                                                                                                                                                                                                                             $Locker: $
                                                                                                                                                               HSIZEBITS
VSIZEBITS
HSIZEMASK
VSIZEMASK
                                                                                                                                                                                                                                                            BCOB_DEST
BCOB_SRCC
BCOB_SRCA
BCOB_SRCA
BCOF_DEST
BCOF_SRCC
BCOF_SRCC
BCOF_SRCCA
                                                                                                                                                                                                                                                                                                           BC1F_DESC
                                                                                                                      LONG
                          blit.1
                                                                                       LONG
LONG
BYTE
BYTE
WORD
WORD
                                                                                                                                                                                                              ABC
ABNC
ANBC
ANBNC
NABC
NABC
NANBC
NANBC
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```

| CIANAME MACRO END                    |
|--------------------------------------------------------------------------|
| CIABNAME MACRO DC.B 'CL BUDM CIABNAME MACRO DC.B 'CL BUDM CIABNAME MACRO |

| Dec 8 16:42 1985 hardware/custom.i Page 3 | 113 sprpt EQU \$120<br>114 |       |          | sd_pos EQU | EQU | sd_dataa EQU | 120 sd_datab EQU \$08<br>121 | 122 color EQU \$180 | 124 ENDC !HARDWARE_CUSTOM_I |
|-------------------------------------------|----------------------------|-------|----------|------------|-----|--------------|------------------------------|---------------------|-----------------------------|
| Dec                                       |                            | ਜ<br> | <b>-</b> | 규 :        | _   | =            |                              |                     |                             |

```
ptr to start of waveform data
length of waveform in words
sample period
volume
sample pair
8 16:42 1985 hardware/custom.i Page 2
                               $060
$062
$064
$066
$072
$072
$072
                                                                                                                                                   AudChannel, 0
                                                                       $080
$084
$088
$080
$080
$090
$092
$094
$096
$096
$096
$096
$096
                                                                                                                             $0A0
$0A0
$0B0
$0C0
$0D0
                                                                                                                                                                                      $100
$102
$104
$108
$108
                                                                                                                                                                               $0E0
                                                                                                                                                                                                           $110
                                EQU
                                                                                                                             22222
                                                                                                                                                      222222
                                                                                                                                                                                      * STRUCTURE
                                                                                                                                                     ac_ptr
ac_len
ac_per
ac_vol
ac_dat
          bltcpt
bltbpt
bltapt
bltcpt
bltcpt
                               bltcmod
bltbmod
bltamod
bltdmod
                                                 bltcdat
bltbdat
bltadat
                                                                      copilic
copimpi
copimpi
copimsi
copins
diwstrt
diwstrp
ddfstrop
dmacon
clascon
clascon
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clascon
intena
intena
adscon
                                                                dsksync
                                                                                                                                                                                     bplcon0
bplcon1
bplcon2
bplimod
bplimod
                                                                                                                                                                              bplpt
                                                                                                                                                                                                           bpldat
                                                                                                                            aud
aud0
aud1
aud2
aud3
          Dec
```

written with a 1 get set or cleared. Bits written with a zero are allways unchanged. Master interrupt (enable only) External interrupt (bisk re-SYNChronized) serial port Receive Buffer Full Mudio channel 3 block finished Audio channel 2 block finished Audio channel 1 block finished Audio channel 0 block finished Set/Clear control bit. Determines if bits Commodore-Amiga, Inc. intenabits.i -- definitions for the bits in the interrupt enable serial port Transmit Buffer Empty \$Header: intbits.i,v 27.1 85/06/24 14:43:07 meil Exp Coprocessor 1/0 Ports and timers software interrupt request ;Disk Block done start of Vertical Blank Blitter finished 8 16:42 1985 hardware/intbits.i Page (and interrupt request) register ENDC HARDWARE\_INTBITS\_I IEND HARDWARE\_INTBITS\_I (12) HARDWARE\_INTBITS\_I SET Eğe INTB RRE
INTB AUD3
INTB AUD3
INTB AUD1
INTB AUD1
INTB AUD1
INTB LLIT
INTB LCRER
INTB COPER
INTB PORTS
INTB DORTS
INTB LORTS
INTB LORTS
INTB LORTS
INTB LORTS
INTB LORTER INTE\_INTEN
INTE\_INTEN
INTE\_EXTER
INTE\_DSKSYNC INTE RRE INTE AUD3 INTE AUD1 INTE AUD1 INTE AUD0 INTE OCER INTE OCCER INTE OCCER INTE OCCER INTE OCCER INTE OCCER INTE OCCER INTB\_INTEN
INTB\_EXTER
INTB\_DSKSYNC INTB\_SETCLR \$Locker: Dec

\$Header: dmabits.1,v 27.1 85/06/24 14:43:02 neil Exp \$0400 \$01FF /\* all dma channels \*/ \* include file for defining data control stuff \*/ to dmaconw definitions \*/ \$8000 \$000F /\* 4 bit mask \*/ \$0001 \$0002 \$0004 \$0008 hardware/dmabits.i Page 1 for denaconw\*/ for dmaconr \*/ IEND HARDWARE\_DMABITS\_I HARDWARE\_DMABITS\_I SET 1 ENDC HARDWARE DWABITS I \$0010 \$0020 \$0040 \$0080 \$0100 \$4000 \$2000 \$0200 Commodore-Amiga, Inc. \* bits 0-8 correspnd write definitions 2012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 1012 - 10 \* read definitions DMAF\_BLTNZERO DWAF\_RASTER DWAF\_MASTER DWAF\_BLITHOG DWAF\_ALL DMAB\_BL.TDONE
DMAB\_BL.TNZERO DWE SETTE DWE AUDIO DWE AUDI DWE AUDI DWE AUDI DWE AUDI DMAF\_BLIDONE dmabits.1 DMAP\_BLITTER DWAB AUDO DWAB AUD1 DWAB AUD2 DWAB AUD3 DWAB DISK 8 16:42 1985 DMAB\_BLITHOC \$Locker: DMAB\_BLITTER MAR\_SPRITE DMAP\_COPPER MAB\_SETCLR DMAB COPPER DHAB RASTER DWAB MASTER 80

```
The following variable is strictly from Kludge-City, where some people still live. It is included solely because our types.i macros aren't smart enough to do the right thing, which would be the automatic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; when this item is pointed to by the cursor and the items highlight; mode HICHINACE is selected, this alternate image will be displayed APTR mi_Selectfill ; points to Image, intuitaxt, or NULL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LONG mi_MutualExclude ; set bits mean this item excludes that item
                                                                                                                                                             these mysteriously-named variables are for internal use only
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BYTE mi_Command ; only if appliprog sets the COMMSEQ flag
                                                                                                                                                                                                                                                                              ; whether or not this menu is enabled;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APTR mi_itemFill ; points to Image, IntuiText, or NULL
                                                                                                                                                                                                                                                                                                         ; FLACS SET BY INTUITION;
MIDRAWN equ $0100 ; this menu's items are currently drawn;
                                           APTR mu_MextMenu ; menu pointer, same level
WCRD mu_LeftEdge ; dimensions of the select box;
WCRD mu_TopEdge ; dimensions of the select box;
WCRD mu_Height ; dimensions of the select box;
APTR mu_MenuName ; text for this Menu header
APTR mu_FirstItem ; pointer to first in chain;
                                                                                                                                                                                                                                                                                                                                                                                                                                                              APTR mi_NextItem ; pointer to next in chained list
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            mi_LeftEdge ; dimensions of the select box mi_TopEdge ; dimensions of the select box
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WORD mi_Width; dimensions of the select box WORD mi_Height; dimensions of the select box WORD mi_Flags; see the defines below
                                                                                                                                                                                                                                                                 ; FLACS SET BY BOTH THE APPLIPROG AND INTUITION
                                                                                                                                                                                                                                                                               MENUENABLED equ $0001
                                                                                                                                                                                                                                                                                                                                                                                                                                       STRUCTURE Menuitem, 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WORD mt_LeftEdge
                                                                                                                                                                                                                                            LABEL mu SIZEOF
                                                                                                                                                                                                                                                                                                                                                                                                                --- Menuitem
                       STRUCTURE Menu, 0
                                                                                                                                                                               MORD muJazzX
                                                                                                                                                                                           WORD IN JazzY
                                                                                                                                                                                                      WORD mu_BeatX
                                                                                                                                                                                                                   NORD mu_BeatY
- Menu
Dale and Carl translated this from the c version
                                                                                           intuition.1 main include file for assembly-language programmers
                                                                                                                                                                                =VoodooDrRj= added back the comments
                                                                                                                                                         -=RJ=- created this file!
                                                                                                            Modification History
Comments
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IFND DEVICES_INPUTEVENT_I
include 'devices/imputevent.1'
ENDC
                                                                                                                                                                                                                                                                                                                                                                                                     'graphics/rastport.1'
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Include 'graphics/layers.i'
              IFND INTUITION_INTUITION_I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            'devices/timer.1'
                                                                                                                                                                                                                                                                                                                                                    Include 'graphics/view.i'
                                                                                                                                                                                                                                                                                                 'graphics/clip.i'
                                                                                                                                                                                                                                                'graphics/gfx.1'
                                                                                                                                                                                                                                                                                                                                                                                         CRAPHICS_RASTPORT_I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Include 'graphics/text.1'
                                                                                                                                                                                                                                                                                                                                                                                                                                           TEND CRAPHICS_LAYERS_I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Include 'exec/ports.1'
                                                                   Commodore-Amiga, Inc.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FND DEVICES_TIMER_I
                                                                                                                                                                                                                                                                                                                                       CRAPHICS_VIEW_I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TEND CRAPHICS_TEXT_I
                                                                                                                                                                                                                                                                                     FND CRAPHICS_CLIP_I
                                                                                                                                                                                                                                    FND CRAPHICS_CFX_I
                            INTUITION_INTUITION_I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IEND EXEC_PORTS_I
                                                                                                                                                                    6-12-85
6-13-85
                                                                                                                                                          1-30-85
                                                                                                                                 date
                                                                                                                                                                                                                                                                                                   nclude
                                                                                                                                                                                                                                                                                                                                                                                                        Include
                                                                                                                                                                                                                                                  nclude
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Include
                                                                                                                                                                                                                                                                                                                                                                                         EB
                                                                                                                                                                                                                                                                                                                                        ENDC
```

```
was activated when it was activated. this flag works in conjunction with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; the flag ENDCADCET, when set, tells the system that this gadget, when ; selected, causes the Requester or AbsMessage to be ended. Requesters or ; AbsMessages that are ended are erased and unlinked from the system
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      is suddenly sending you a stream of mouse movement events. If you don't set RELVERIFY, you'll get at least one Mouse Position event.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              your Window). When the Cadget is deselected (immediately if you have no RELVERIET) the previous state of the REPORTHOUSE flag is restored You probably want to set the CADGIMEDIATE flag when using FOLLOWMOUSE, since that's the only reasonable way you have of learning why Intuition
                                                                                                                                                                                                            ; the CADCDISABLED flag is initialized by you and later set by Intuition ; according to your calls to On/OffCadget(). It specifies whether or not ; this Cadget is currently disabled from being selected CADCDISABLED equ $0100
RELECTION equ $0008 ; set if rel to bottom, clear if rel top RELRICHT equ $0010 ; set if rel to right, clear if to left set the RELMIDIH bit to spec that Width is relative to width of screen
                                                                                                                           ; the SELECTED flag is initialized by you and set by Intuition. It specifies whether or not this Cadget is currently selected/highlighted SELECTED equ $0080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            the FOLLOWNOUSE flag, when set, specifies that you want to receive reports on mouse movements (1e, you want the REPORTMOUSE function for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; if any of the BORDER flags are set in a Gadget that's included in the
                                                       RELMIDIH equ $0020
set the RELHEIGHT bit to spec that Height is rel to height of screen
                                                                                                                                                                                                                                                                                                                                                                                                                           ; the flag GADCIMMEDIATE, when set, informs the caller that the gadget
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Cadget list when a Window is opened, the corresponding Border will be adjusted to make room for the Cadget
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; this bit for toggle-select mode
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STRINGCENTER equ $0200 ; center the String STRINGRIGHI equ $0400 ; right-justify the String
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  equ $0100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CADGIMEDIATE equ $0002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                equ $0080
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              equ $0004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FOLLOWINE equ $0008
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             equ $0020
                                                                                                                                                                                                                                                                                                                                                                                           equ $0001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RICHTBORDER ogu $0010
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             equ $0040
                                                                                              CRELHEIGHT equ $0040
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  the RELVERIFY flag
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BOTTOMBORDER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TOCCL ESELECT
   CRELBOTTOM
CRELRICHT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LEFTBORDER
                                                       GRELWIDTH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ENDCADCET
                                                                                                                                                                                                                                                                                                                                                                                           RELVERIEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             OPBORDER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    33.4
33.4
33.5
33.5
     ; ptr to general purpose User data (ignored by Intuit)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; pointer to a structure of special data required by Proportional, String
                                                                                                                                                                     ; appliprog can specify that the Gadget be rendered as either as Border; or an Image. This variable points to which (or equals NUL if there's
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; set this flag if the CadgetRender and SelectRender point to Image imagery, ; clear if it's a Border
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               combinations in these next two bits specify to which corner the gadget's Left & Top coordinates are relative. If relative to Top/Left, these are "normal" coordinates (everything is relative to something in this universe)
                                                                                                                                                                                                                                                            ; appliprog can specify "highlighted" imagery rather than algorithmic; this can point to either Border or Image data
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            --- FLACS SET BY THE APPLIPROG ------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 combinations in these bits describe the highlight technique to be used
                                                                                                                                                                                                                                                                                                                                                                                           which gadgets mutually-exclude which other ones. The bits in MutualExclude correspond to the gadgets in object containing the gadget list. If this gadget is selected and a bit is set in this gadget's MutualExclude and the gadget corresponding to that bit is currently selected (e.g. bit 2 set and gadget 2 is currently selected) that gadget must be unselected. Intuition does the visual unselecting (with checkmarks) and leaves it up
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ; to the program to unselect internally LONG gg MutualExclude ; set bits mean this gadget excludes that
                                                                                                                                                                                                                                                                                                                                                                              by using the MutualExclude word, the appliprog can describe
                                                                                                ; see below for list of defines
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Complement the select box
Draw a box around the image
Blast in this alternate image
don't highlight
                                                           ; see below for list of defines
                                                                                                                                 ; see below for defines
                                                                                                                                                                                                                                                                                                                                        ; text for this gadget;
                                                                                                                                                                                                          nothing to be rendered about this Gadget)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WORD 9g_GadgetID ; user-definable ID field APTR 9g_UserData ; ptr to general purpos
      "hit box" of gadget; "hit box" of gadget
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CADCHICHBITS equ $0000 ; CADCHCOMP equ $0000 ; CADCHBOX equ $0001 ; Dr CADCHIMAZE equ $0002 ;
                                                                                                                                                                                                                                                                                                     APTR gg_SelectRender
                                                                                                                                                                                                                                APTR og_CadgetRender
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APTR gg_SpecialInfo
                                                                                                                                                                                                                                                                                                                                          APIR og_CadgetText
                                                                                                 WORD gg Activation
                                                                                                                                     WORD gg_CadgetType
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       equ $0002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               equ $0003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    oqu $0004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LABEL 99_SIZEOF
      WORD gg_Width
WORD gg_Height
                                                              MORD og Flags
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CADCINACE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CADCHINONE
```

routines, to adjust the size of the AUTOKNOB according to how much of the data can be seen. This is also used to decide how far to advance the Pots when User hits the Container of the Gadget. For instance, if you were controlling the display of a 5-line Mindow of text with this Gadget, and there was a total of 15 lines that could be displayed, you would set the VertBody value to (MAXBODY / (TotalLines / DisplayLines)) = MAXBODY / 3. Therefore, the AUTOKNOB would fill 1/3 of the container, and if User hits the Cotainer outside of the knob, the pot would advance 1/3 (plus or minus) If there's no body to show, or the total amount of displayable info is less than the display area, set the Body variables to the MAX. To adjust these after the Cadget is ; these are the variables that intuition sets and maintains WARD pi\_CWidth ; Container width (with any relativity absoluted) WARD pi\_CHeight ; Container height (with any relativity absoluted) ; this flag sez: gimme that old auto-knob ; if set, the knob can move horizontally FREEVERT equ \$0004 ; if set, the knob can move vertically PROPBORDERLESS equ \$0008 ; if set, no border will be rendered KNOEHIT equ \$0100 ; set when this Knob is hit ; minimum vertical size of the knob ; minimum horizontal size of the knob ; added to the System, use ModifyProp(). WORD pi HorizBody ; horizontal Body ; maximum body value Container borders ; Container borders ; maximum pot value ; pot increments ; pot increments WORD pi\_VertBody;; vertical Body AUTOKNOB equ \$0001 ; t FREEKORIZ equ \$0002 WORD pl\_VPotRes ; WORD pl\_LeftBorder WORD pl\_TopBorder --- FLAC BITS ---equ 4 ; equ \$FFFF equ \$FFFF FREEVERT equ \$0004 pl SIZEOF WORD pl\_CHeight WORD pl\_HPotRes WORD pl\_VPotRes LABEL KNOBEMIN KNOBMIN MAXBODY MAXPOT 393 394 395 395 397 398 399 400 401 405 405 406 

--- Stringinfo ---

this is the special data required by the string Gadget trible SpecialInfo typically, this data will be pointed to by the Gadget variable SpecialInfo STRUCTURE Stringinfo, 0

APTR si\_Buffer ; the buffer containing the start and final string
APTR si\_UndoBuffer; optional buffer for undoing current entry
WGRD si\_BufferPos ; character position in Buffer
WGRD si\_Buffer (including NULL)
WGRD si\_DispPos ; Buffer position of first displayed character ; you initialize these variables, and then intuition maintains them APTR si Buffer ; the buffer containing the start ... ... ... APTR si\_UndoRuffer

```
: If you want this Gadget to use your own Console keymapping, you set the ALTKIYARP bit in the Activation flags of the Gadget, and then set this variable to point to your keymap. If you don't set the the the standard ASCII keymapping.

ALTKEYMAP, you'll get the standard ASCII keymapping.
                                                                       WORD si_DispCount ; number of whole characters visible in Container
                                                                                                                                                                                      ; you can initialize this variable before the gadget is submitted to ; intuition, and then examine it later to discover what integer
                                                                                                                                                                                                                                                                                   CONG si_LongInt ; the LONG return value of a LONGINT String Gadget
                                                                                                                                                                                                                                      the user has entered (if the user never plays with the gadget, the value will be unchanged from your initial setting)
        ; Intuition initializes and maintains these variables for you
                           MORD si_UndoPos ; character position in the undo buffer WORD si_NumChars ; number of characters currently in Buffer
                                                                                                   WORD signer; topleft offset of the container WORD signor; topleft offset of the container APTR signorPtr ; the RastPort containing the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LABEL SL SIZEOF
899
```

(always relative to the upper-left corner of something) and then the screen location IntuiText is a series of strings that start with a The text is null-terminated of the string. == IntuiText === text

475 476 478 479 480

STRUCTURE Intuilext, 0

; the pens for rendering the text ; the pens for rendering the text UBYTE it\_FrontPen UBYTE it\_BackPen The following variable is strictly from Kludge-City, where some people still live. It is included solely because our types. I macros aren't smart enough to do the right thing, which would be the automatic

; the mode for rendering the text

UBYTE 1t\_DrawMode

word-alignment to these references as it SHOULD be in order to duplicate correcting the problem, I am obliged to kludge up my include.1 files. So hare it is! And instead of BYTE 1t\_KludgeFill00 ; defined as a BYTE because this does the way allgraments are adjusted in the c-language.

; relative start location for the text ; if NULL, you accept the defaults ; pointer to null-terminated text 1t\_ITextFont WORD it\_LeftEdge WORD it\_TopEdge APIR

; relative start location for the text

; continuation to TxWrite another text

APIR 1t\_NextText

APTR 1t\_IText

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LABEL 1t SIZEOF

|| Border ||

; the RastPort containing this Gadget

After all the Draws are done, if NextBorder is non-zero we call DrawBorder Data type Border, used for drawing a series of lines which is intended for use as a border drawing, but which may, in fact, be used to render any The routine DrawBorder sets up the RastPort with the appropriate variables, then does a Move to the first coordinate, then does Draws ; vector coordinate pairs rel to LeftTop ; pointer to any other Border too ; initial offsets from the origin ; initial offsets from the origin ; pen number for rendering ; pen number for rendering : mode for rendering ; number of XX pairs to the subsequent coordinates. arbitrary vector shape. bd\_NextBorder UBYIE bd FrontPen bd DrawMode WORD bd\_LeftEdge bd BackPen STRUCTURE Border, 0 MORD bd\_TopEdge LABEL bd SIZEOF bd\_Count ZZ Pa recursively UBYTE UBYTE APTR BYTE APTR 

; starting offset relative to something ; starting offset relative to something ; pixel size (though data is word-aligned) This is a brief image structure for very simple transfers of sizel size image data to a RastPort STRUCTURE Image,0 ig Height ig Depth ig\_ImageData WORD 1g\_LeftEdge ig\_TopEdge \_\_\_\_ Image \_\_\_\_ 19 Width ACR. 9 9

the PlanePick and PlaneOnOff variables work much the same way as the equivalent CELS Bob variables. It's a space-saving mechanism for image data. Rather than defining the image data

; pointer to the actual image bits

; pixel size

APTR P

for every plane of the RastPort, you need define data only for planes that are not entirely zero or one. As you define your Imagery, you will often find that most of the planes ARE just as color selectors. For instance, if you're designing a two-color Gadget to use colors two and three, and the Gadget will reside in a five-plane display, plane zero of your imagery would be all ones, bit plane one would have data that describes the imagery, and bit planes two through four would be

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```
; the IDCMPWindow variable will always have the address of the Window o
the time values are copies of the current system clock time. Micros are in units of microseconds, Seconds in seconds.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        the IDCMP Flags do not use this special bit, which is cleared when Intuition Intuition sends its special message to the Task, and set when Intuition gets its Message back from the Task. Therefore, I can check here to find out fast whether or not this Message is available for me to send NNELYMESSACE equ $80000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       $80000000 is reserved for internal use by IDCMP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; See the Programmer's Quide
; See the Programmer's Quide
                                                                                                                                                                                                                                                                                                                                                                                                     See the Programmer's Guide ; See the Programmer's Guide
                                                                                                                                                                                                                                                                                                                            See the Programmer's Guide
See the Programmer's Guide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               See the Programmer's Guide
See the Programmer's Guide
See the Programmer's Guide
                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; See the Programmer's Guide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; See the Programmer's Guide ; See the Programmer's Guide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; See the Programmer's Guide
                                                                                                                                                                                                                                                                                                                                                                                                                                            ; See the Programmer's Guide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; See the Programmer's Guide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REFRESHWINDOW equ $00000004
                                                                                                                                                                                                                                                                                                                                                                                    $0000000$
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        $00020000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           $00040000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             $00080000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REÇCLEAR equ $0001000 ; S
MENUVERIEY equ $0002000
                                                                                                                                                                                                                                                                                                                                                                                                  MOUSEMOVE equ $00000010
CADCEIDOMN equ $00000020
                                                                                                                                                                                                                                                                                                                                                                                                                                SIZEVERIFY equ. $00000001
NEWSIZE equ $0000002
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MENUPICK equ $00000100 ;
CLOSEMINDOM equ $00000200
RAMEY equ $00000400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         $0000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                $0010000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  $0020000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     $00400000
                                                                                                                                                                      ; system-use variable
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         equ $00000080
n $00001000
                                                                                                                                 APTR 1m_IDCMPWindow
                                                                                                                                                                                        APTR in SpecialLink
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DISKINSEKALLE
DISKREMOVED equ $000
MBENCHESSACE equ
                                                                                                                                                                                                                               LABEL IM SIZEOF
                                                                                                                                                                                                                                                                                                        --- IDCMP Classes
                                    LONG in Seconds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LONELYMESSACE equ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       INACTIVENTINDOM equ
                                                    LONG im Micros
                                                                                                              this IDOM
                                                                                                                                                                                                                                                                                                                                                                                    MOUSEBUTTONS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NOTEZ-BIEN:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VANILLAKEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NTUITICKS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    REQVERIEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DELIAMONE
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\$0001; IntuiWants verification or MENUCANCEL \$0002; HOT Reply of this cancels Menu operation \$0003; Intuition simply wants a ReplyMsg() ASAP

```
; window system Cadgets by setting flag-bits in the variable Flags (see ; the bit definitions below)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               these variables contain the width and height of the inner-Window of CIMMEZEROZERO Windows
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        inner-Window of GIMEZEROZERO Windows. This is compared with the HouseX and HouseY variables, which contain the mouse coordinates relative to the upper-left corner of the Window, GIMMEZEROZERO
                                                                                                                                                                                                                                                                                                                                                               ; the CheckMark is a pointer to the imagery that will be used when
                                                                                                                                                                                                                                                                                                                                                                            of this Window that want to be checkmarked
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   --- FLACS REQUESTED (NOT DIRECTLY SET THOUGH) BY THE APPLIPROC INDOMSIZING equ $0001 ; include sizing system-gadget?
                                                                                                                              set these AFIER you Open the Window by calling SetPointer()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  These variables have the mouse coordinates relative to the
                                                                                                                                                                                                                                                                                                                                                                                           ; if this is equal to NULL, you'll get the default imagery APTR wd_CheckMark
                                                                                                                                                                                                                                    the IDCMP Flags and User's and Intuition's Message Ports
                                                                                                                                                                                                                                                                                                                                                                                                                                       ; if non-null, Screen title when Window is active
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    general-purpose pointer to User data extension
PTR wd_UserData
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; stash of Window.RPort->Layer
                                                                                                                  ; sprite data information for your own Pointer
                                                           ; these are for opening/closing the windows
                                                                                                                                                                                                                                                                                                                                                                                 rendering Menuitems
                                                                                                                                                                                                                                                                                                                                                                                                                                                      APTR wd_ScreenTitle
                                                                                                                                                                                                                                                 ULONG wd_IDOPPFlags
                                 APTR wd FirstGadget
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SHORT wd_GZZWouseX
SHORT wd_GZZWouseY
                                                                                                                                                                                                                                                                                APIR wd_WindowPort
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SHORT wd_GZZWidth
SHORT wd_GZZWeight
                                                                                         APTR wd_Descendant
                                                                                                                                                                                                                                                                                              APTR wd_MessageKey
                                                                                                                                                              BYTE wd PtrHeight
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            notwithstanding
                                                                                                                                                                                                                                                                                                                        BYTE wd_DetailPen
                                                                                                                                                                          BYTE wd Ptrwidth
                                                                                                                                                                                                                                                                                                                                       BYTE wd_BlockPen
                                                                                                                                                                                                                                                                 APIR wd_UserPort
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APTR wd_ExtData
                                                                                                                                                  PTR wd Pointer
                                                                                                                                                                                          BYTE wd_XOffset
                                                                                                                                                                                                          BYTE wd_YOffset
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APTR wd_MLayer
                                                                           APTR wd_Parent
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LABEL wd_Size
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WINDOWSIZING
WINDOWDRAG
     GIMMEZEROZERO when you open the window, then the upper-left of the ClipRect for this window will be upper-left of the BitMap (with correct offsets when in SuperBitMap mode; you MUST select GIMMEZEROZERO when using SuperBitMap). If you don't specify ZeroZero, then you save memory (no allocation of RastPort, Layer, ClipRect and associated Bitmaps), but you also must offset all your writes by BorderTop, BorderLeft and do your own mini-clipping to prevent writing over the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        You supply a linked-list of gadget that you want for your Window.
This list DOES NOT include system Gadgets. You get the standard
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; first in linked list of active Requesters
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          the border variables describe the window border. If you specify
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; number of Requesters blocking this Window
                                                                                                                                                                                                                                                                                                                                                                                                                            ; first in a list of menu headers
                                                                                                                                                                                ; for the linked list of a Screen
         ; This group of codes is for the WBENCEMPESSACE messages
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; this Window's very own RastPort
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       the double-menu Requester
                                                                                                                                                                                                                                                                                  relative top top-left corner
                                                                                                                                                                                                                                                                                               relative top top-left corner
                                                                                                                                                                                                                                                                                                                                                                                                  ; see below for definitions
                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; title text for the Window
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   this Window's Screen
                                                                                                                                                                                                                             screen dimensions
                                                                                                                                                                                                                ; screen dimensions
                                                                                                                                                                                                                                                         ; screen dimensions
                                                                                                                                                                                                                                                                                                                                              ; minimum sizes
                                                                                                                                                                                                                                                                                                                                                                           ; maximum sizes
                                                                                                                                                                                                                                           ; screen dimensions
                                                                                                                                                                                                                                                                                                                                minimum sizes
                                                                                                                                                                                                                                                                                                                                                            maximum sizes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BYTE wd_BorderRight
BYTE wd_BorderBottom
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            wd_FirstRequest
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APIR wd BorderRPort
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; system gadgets
BYTE wd_BorderLeft
                                                                                                                                                                                      APTR vd_NextWindow
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           wd_DMRequest
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              wd_BorderTop
                                                                                                                                                                                                                                                                                                                                              wd_MinHeight
wd_MaxWidth
                                                                                                                                                                                                                                                                                                                                                                                                                                     APTR wd_MenuStrip
                          WBENCHCHOPEN equ $0001
WBENCHCLOSE equ $0002
                                                                                                                                                                                                                                                                                                                                                                            WORD wd_MaxHeight
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WORD wd_ReqCount
                                                                                                                                                                                                                   WORD wd LeftEdge
                                                                                                                                                                                                                                                                                                                                  wd MinWidth
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APTR wd_WScreen
                                                                                                                                                         STRUCTURE Window, 0
                                                                                                                                                                                                                               wd_TopEdge
                                                                                                                                                                                                                                                                                                      WORD wd_MouseX
                                                                                                                                                                                                                                                            WORD wd Helght
                                                                                                                                                                                                                                                                                       WORD wd MouseY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APIR wd_Title
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APTR wd RPort
                                                                                                                                                                                                                                                                                                                                                                                                         LONG wd Flags
                                                                                                                                                                                                                                             wd Width
                                                                                                                                - Mindow
                                                                                                                                                                                                                                                                                                                                   BYTE
                                                                                                                                                                                                                                                                                                                                                                200
                                                                                                                                                                                                                                                                                                                                                  1080
                                                                                                                                                                                                                                9
                                                                                                                                                                                                                                               680
681
682
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                                                                                                                                                                                                                                                                                                      593
598
598
598
```

; the type variable describes the Screen in which you want this Window ; open. The type value can either be CUSTOMSCREEN or one of the

nw\_MaxHelght

Ş

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the Screen pointer is used only if you've defined a CUSTUMSCREEN and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SUPER_BITMAP Window? If so, put the address of your BitMap structur. in this variable. If not, this variable is ignored and dosn't have
                                                                                                                                                                                                                                                                                                                                                                                                                                   want this Window to open in it. If so, you pass the address of the Custom Screen structure in this variable. Otherwise, this variable
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                which means that you want to let the User to change the size of this Window. You describe the minimum and maximum sizes that the Window can grow by setting these variables. You can initialize any one these to zero, which will mean that you want to duplicate the setting for that dimension (if MinWidth == 0, MinWidth will be
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    the values describe the minimum and maximum sizes of your Windows. these matter only if you've chosen the WINDOWSIZING Gadget option,
                                                                                                                                                                                                                                                  system Window Gadgets by setting flag-bits in the variable Flags
                                                                                                                                                                                                                     ; You supply a linked-list of Gadgets for your Window.
; This list DOES NOT include system Gadgets. You get the standard
                                                                                                                                                                                                                                                                                                             ; the CheckMark is a pointer to the imagery that will be used when ; rendering MenuItems of this Window that want to be checkmarked
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           You can change these settings later using SetWindowLimits(). If you haven't asked for a SIZING Cadget, you don't have to initialize any of these variables.
                                                                                                                                                                                                                                                                 the bit definitions under the Window structure definition)
                                                                                                                                                                                                                                                                                                                                          this is equal to NULL, you'll get the default imagery
                                                                                                                                                                                         ; see the Flag definition under Window
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   is ignored and doesn't have to be initialized.
                                                                     ; initial Window dimensions
                                                                                                                                                                                                                                                                                                                                                                                         ; title text for the Window
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               set to the opening Width of the Window).
                                                                                                                                                         JLONG nw_IDCMPFlags
                                                                                                                                                                                                                                                                                APTR nw_FirstGadget
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            to be initialized
        STRUCTURE NewWindow, 0
                                                                                                                 nw_DetailPen
                                                                                                                                                                                                                                                                                                                                                          APTR nw_CheckMark
                                     nw_LeftEdge
                                                                                                                               nw_BlockPen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WORD nw_MinHeight
                                                       nw_TopEdge
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        WORD IN MINWIGEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     nw MaxWidth
                                                                                    nw_Height
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APTR nv_Screen
                                                                                                                                                                                     LONG my_Flags
                                                                                                                                                                                                                                                                                                                                                                                     APTR nw_Title
                                                                   nw Width
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          nw BitMap
                                                                                   200
                                                                                                              BYTE
                                                                                                                               BYTE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APTR
                                     this window is the active one this window is in request mode this Window is active with its Menus on
                                                                                                                                                                                                                                           ; set this to hear about every mouse move
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     --- see struct IntuiMessage for the IDCMP Flag definitions ---
  ; include depth arrangement gadget?
; include close-box system-gadget?
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; not to be bothered with REFRESH
                                                                                                                                                                                                              ; this is an ever-popular BACKOROP window
                                                                                                                                                                                                                                                                                                      ; set this to get a Window sans border
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; Window is currently refreshing
; WorkBench Window
                                                                                                                                                                                                                                                                                                                                   ; when Window opens, it's the Active one
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; only one timer tick at a time
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Catch RMB events for your own
                                                                                                     combinations of the REFRESHBITS select the refresh type
                                               ; size gadget uses right border ; size gadget uses bottom border
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ;bits of Flag unused yet
                                                                                                                                                                                                                                                                           ; make extra border stuff
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     equ $01000000
equ $02000000
equ $04000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       equ $00020000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               equ $FCFC0000
                                                                                                                                                                                                                                                                                                                                                                                                                                                          equ $00010000
 equ $0004
equ $0008
                                                                                                                                    SWART_REFRESH equ $0000
SIMPLE_REFRESH equ $0040
SUPER_BITMAP equ $0080
                                                                                                                                                                                                                                                                                                                                                                                                equ $4000
equ $8000
                                                                                                                                                                                                                                                                        GIMMEZEROZERO equ $0400
                                                                                                                                                                SUPER_BITMAP equ $0080
OTHER_REFRESH equ $0000
                                                                                                                                                                                                                                                                                                                                                                                              $4000
                                                                                                                                                                                                                                                                                                                                                                                equ $2000
                                                                                                                                                                                                                                                                                                                                                                FLACS SET BY INTUITION
                                                                                                                                                                                                                                           REPORTMOUSE equ $0200
                                                                                                                                                                                                                                                                                                                                                                                                                                          --- Other User Flags
                                             equ $0010
                                                          SIZEBBOTIOM equ $0020
                                                                                                                                                                                                                                                                                                     BORDERLESS equ $0800
                                                                                                                     REFRESHBITS equ $00C0
                                                                                                                                                                                                              BACKDROP equ $0100
                                                                                           --- refresh modes
                                                                                                                                                                                                                                                                                                                                   ACTIVATE equ $1000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NOCAREREFRESH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WINDOMREFRESH
                                                                                                                                                                                                                                                                                                                                                                                MINDOWACTIVE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SUPER UNUSED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WINDOWIICKED
WINDOWDEPTH
               MINDOMCLOSE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WBENCHMINDOW
                                             SIZEBRICHT
                                                                                                                                                                                                                                                                                                                                                                                            INREQUEST
MENUSTATE
                                                                                                                                                                                                                                                                                                                                                                                                                                                         RMBIRAP
                                                                       790
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                                                                                                                                                                                                                                                                                                                    906
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8

; for rendering the detail bits of the Window ; for rendering the block-fill bits

; initial IDCMP state

; initial Window dimensions initial Window dimensions initial Window dimensions

```
; the following variable(s) are maintained by Intuition to support the ; DisplayBeep() color flashing technique WARD sc.SaveColor0
                                                                                                                                                                                                                                                                                                              The SCREENTYPE bits are reserved for describing various Screen types
                          ; You supply a linked-list of Gadgets for your Screen.
; This list DOES NOT include system Gadgets. You get the standard
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ; default rendering pens (for Windows too)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               default rendering pens (for Windows too)
; each screen gets a LayerInfo
                                                                                                                                                                                                                                                                                                                                                                                                                                                     $0040 ; if you are supplying your own BitMap
                                                                                                                                                                                                                                                                                                                                                                                                  $0010 ; this gets set by a call to ShowTitle()
                                                                                                                                                                                                                                        ; general-purpose pointer to User data
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; display "modes" for this Screen
                                                                                       ; for bar/border/gadget rendering
                                                                                                                                                                                                                                                                                                                           ; for bar/border/gadget rendering
                                                                                                                                                                                                                                                                                                                                                                                                                             $0020 ; set when Screen is beaping
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           initial Screen dimensions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; initial Screen dimensions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; initial Screen dimensions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ; initial Screen dimensions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; initial Screen dimensions
                                                                                                                                                                            This layer is for the Screen and Menu bars
                                                                                                                                                                                                                                                                                                  --- FLACS SET BY INTUITION -----
                                                   ; system Screen Gadgets by default
APTR sc_FirstGadget
   STRUCT sc_LayerInfo, 11_SIZEOF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRUCTURE NewScreen, 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ns_DetailPen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WORD ns_ViewModes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BYTE ns_Blockden
                                                                                         BYTE sc_DetailPen
BYTE sc_BlockPen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WORD ns_TopEdge
WORD ns_Width
WORD ns_Height
WORD ns_Depth
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WORD ns_LeftEdge
                                                                                                                                                                                                                                           APTR sc_UserData
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -- NewScreen
                                                                                                                                                                                                                                                                                                                                                                                                                                                           퓽
                                                                                                                                                                                                                                                                  LABEL SC_SIZEOF
                                                                                                                                                                                                                   APTR sc_ExtData
                                                                                                                                                                                            APTR BarLayer;
                                                                                                                                                                                                                                                                                                                                                                                                                                  age
e
                                                                                                                                                                                                                                                                                                                                                                                                            라
                                                                                                                                                                                                                                                                                                                                                                                                                                                         CUSTOMBITMAP
                                                                                                                                                                                                                                                                                                                                                                     MENCHISCREEN
                                                                                                                                                                                                                                                                                                                                                                                CUSTOMSCREEN
                                                                                                                                                                                                                                                                                                                                            SCREENTYPE
                                                                                                                                                                                                                                                                                                                                                                                                        SHOWTITLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BYTE
                                                                                                                                                                                                                                                                                                                                                                                                                                 BEEPING
       The following variable is strictly from Kludge-City, where some people still live. It is included solely because our types i macros aren't smart enough to do the right thing, which would be the automatic word-alignment to these references as it SHOULD be in order to duplicate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  correcting the problem, I am obliged to kludge up my include.1 files.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      the way allgements are adjusted in the c-language. And instead of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; auxillary graphaxcess baggage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; the display data structures for this Screen
APTR sc.Font
; this screen's default font
STRUCT sc.ViewPort, vp.SIZEOF; describing the Screen's display
STRUCT sc.RastPort, rp.SIZEOF; describing Screen rendering
STRUCT sc.BitMap, bm.SIZEOF; auxiliary graphexcess baggage
            See the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; defined as a BYTE because this does
                                                                                                                                                                                                                                                                                                                                                                                                  Bar sizes for this Screen and all Window's in this Screen
                                                                                                                                                                                                                                                                                                 ; position relative to upper-left ; position relative to upper-left
                                                                                                                                                                                                                                                                         ; for Windows without ScreenTitle
                                                                                                                                                                                      ; linked list of screens
; linked list Screen's Windows
           system standard Screen Types such as WBENCHSCREEN. type definitions under the Screen structure
                                                                                                                                                                                                                          ; parameters of the screen ; parameters of the screen
                                                                                                                                                                                                                                                             ; null-terminated Title text
                                                                                                                                                                                                                                                                                                                                       ; see definitions below
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BYTE SC_KludgeF11100
                                                                                                                                                                                                                                                                                                                                                                             sc_DefaultTitle
                                                                                                                                                                                                                                                                                                                                                                                                                sc_BarHeight
sc_BarVBorder
sc_BarHBorder
                                                                                                                                                                                                                                                                                                                                                                                                                                                      sc_MenuVBorder
                                                                                                                                                                                                    APTR sc_FirstWindow
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sc_MenuilBorder
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sc_WBorBottom
                                                                                                                                                                                         sc_NextScreen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       sc_WBorRight
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     So here it is!
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sc_MBorLeft
                                                                                                                                                                                                                            WORD sc_LeftEdge
WORD sc_TopEdge
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                sc_MBorTop
                                                                                                                                                                 STRUCTURE Screen, 0
                                                                                                                                                                                                                                                                WORD sc_Width
WORD sc_Height
                                                                                                                                                                                                                                                                                                    MORD sc_MouseY
                                                                                                                                                                                                                                                                                                                  sc_MouseX
                                                                                                                                                                                                                                                                                                                                          NORD Sc_Flags
                                                                                                                                                                                                                                                                                                                                                                 sc_Title
                                                                LABEL IN SIZE
                                          WORD IN_Type
                                                                                                                                          || Screen ||
                                                                                                                                                                                                                                                                                                                                                                                                                 PETA.
                                                                                                                                                                                                                                                                                                                                                                              APTR :
                                                                                                                                                                                         APIR
                                                                                                                                                                                                                                                                                                                  901
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```
STRUCT pf_PointerMatrix,POINTERSIZE*2; Definition of pointer sprite BYTE pf_XOffset; X-Offset for active 'bit'
BYTE pf_YOffset; Y-Offset for active 'bit'
                STRUCT pf_KeyRptSpeed,TV_SIZE ; repeat speed for keyboard
STRUCT pf_KeyRptDelay,TV_SIZE ; Delay before keys repeat
STRUCT pf_DoubleClick,TV_SIZE ; Interval allowed between clicks
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WAD pf_PrinterType ; printer type
STRUCT pf_PrinterFilename,FILENAME_SIZE ; file for printer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Offset for top lefthand corner; X and Y dimensions; View initial offsets at startup
                                                                                                                                                              ; Colours for sprite pointer
                                                                                                                                                                                                                                                                          **************************
                                                                                                                                                                                                                                                                                                                            ; For further system expansion
                                                                                                                                                                                                                       ; Sensitivity of the pointer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; paper size
; paper length in lines
; continuous or single sheet
                                                                                                                                                                                                                                                                                             Standard default colours
                                                                                                                                                                                                                                                                                                                                                                                                                                            ; View initial offsets
                                                                                                                                                                                                                                                                                                                 Used in the Workbench
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; CLI availability switch
                                                                                                                                                                                                                                                                                                                                                                      the Intuition View
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ; === Preferences definitions ==
                                                                                                                                                                                                                                                        ; Workbench Screen colors
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; print paper description MORD pf_PaperSize ; p
                                                                                      ; Intuition Pointer data
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  printer configurations
                                                                                                                                                                                                                                                                                                                                                                      for
: various timing rates
                                                                                                                                                                                                                     WORD pf_PointerTicks
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               UMORD pf_PaperLength
                                                                                                                                                                                                                                                                                                                                                              ; positioning data i
BYTE pf_ViewXOffset
BYTE pf_ViewYOff===+
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRUCT pf_padding, 50
                                                                                                                                                                                                                                                                                                                                                                                                                        pf_ViewInitX
                                                                                                                                                                                                                                                                                                                                                                                                                                          pf_ViewInitY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WORD pf_PaperType
                                                                                                                                                                WORD pf_color17
                                                                                                                                                                                    MORD pf_color18
                                                                                                                                                                                                    WORD pf_color19
                                                                                                                                                                                                                                                                          WORD pf_color0
                                                                                                                                                                                                                                                                                         WORD pf_color1
WORD pf_color2
                                                                                                                                                                                                                                                                                                                              WORD pf_color3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BOOL EnableCLI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LABEL pf_SIZEOF
                                                                                                                                                                                                                                                                                                                                                                                                                        200
                                                                                                                                                                                                                                                                                                                                                                                                                                          6901
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                                                                                                                                                                                                                     0.78
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1104
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1105
                                                                                                                                                       that you want used for your Screen, you set the flags CUSTOMBITMAP in
the Types variable and you set this variable to point to your BitMap
structure. The structure will be copied into your Screen structure,
after which you may discard your own BitMap if you want
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ; eighty-column or sixty-column mode. The Preferences structure reflects; which is currently selected by the value found in the variable FontSize, which may have either of the values defined below. These values actually, are used to select the height of the default font. By changing the height, the resolution of the font changes as well.

TOPAZ_RIGHTY equ 8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      These actually describe the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      height of the defaults fonts. The default font type is the topaz font, which is a fixed width font that can be used in either
                                                                                                                                       ; if you are opening a CUSIONSCREEN and already have a BitMap
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (1+16+1)*2 ; Size of Pointer data buffer
                                                                    APTR ns_DefaultTitle ; Title when Window doesn't care
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ; height for system default font
                                 ; default font for Screen and Windows
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               these are the definitions for the printer configurations
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; baud rate for the serial port
                                                                                                     ; Your own initial Screen Gadgets
; Intuition Screen Type specifier
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                describing what's hooked up to the portrinterPort ; printer port connection
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       These defines are for the default font size.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; Filename size
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         the baud rate of the port
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              default font height
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       UBYIE of PrinterPort
                                                                                                                                                                                                                                       APTR ns_CustomBitMap
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STRUCTURE Preferences, 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BYTE of FontHeight
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           USHORT pf_BaudRate
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FILENAME_SIZE equ 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                         === Preferences ===
                                                                                                         APTR ns_Cadgets
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2
                                                                                                                                                                                                                                                                          ns_SIZEOF
AORD ns_Type
                                   APTR ns Font
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       constant
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   POINTERSIZE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TOPAZ SIXTY
                                                                                                                                                                                                                                                                         LABEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1042
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                                                                                                                                                                                                                       1022
```

at startup

```
this structure is used for remembering what memory has been allocated to date by a given routine, so that a premature abort or systematic exit
                                                                                                                                can deallocate memory cleanly, easily, and completely
                          APTR rm_NextRemember
ULONG rm_RememberSize
APTR rm_Memory
                                                                                                                                                                                                                                                                                                NOMENU equ $001F
NOITEM equ $003F
NOSUB equ $001F
MENUNUL equ $FFFF
                                                                                                                                        STRUCTURE Remember, 0
                                                                                                        == Remember
CBM_MES1000 equ $0.
DIAB_630 equ $04
DIAB_ADV_D25 equ
                                                                                                                                                                             LABEL rm_SIZEOF
                   DIAB_C_150 equ $
EPSON equ $07
                                                                                                                                                                                                                                                                                          = MENU STUFF ===
                                                                                                                                                                                                                                 = MACROS ===
 $01
          ; PrinterPort
PARALLEL_PRINTER equ $00
SERIAL_PRINTER equ $01
                                                                                                                                                                                                                                                                                                                                                 ; PrinterType
CUSTOM_NAME equ $00
ALPHA_P_101 equ $01
BROTHER_15XL equ $0
                                                                                                                                          equ $400
                                                             $03
$04
$05
$05
                                                                                                                                                                                                                                                                                                                        $ 20
$ 30
$ 40
                                                                                                                 equ $80
                                                                                                                                                 $800
                                                                                                                                                                                                                                                                                                                  $10
                                                                                                                                   equ $000
                                                                                                                                                                                                                 ; Print Image IMACE POSITIVE equ
                                                                                                                                                                                                                                                  ab
                                                                                                                                                                                                                                                                           $00
                                                                                                    ; PaperType
FANFOLD equ $00
SINCLE equ $
                                           $00
$01
                                                                                                                                                                                                                                                                           SHADE_BW equ $00
SHADE_CREYSCALE
SHADE_COLOR equ
                                                                                                                                                                                                                                                                                                                         2
                                                                                                                                                                                                                                                                                                             8
                                                                                                                                                                                                                                                        ASPECT_VERT equ
                                                                                                                                                                     라 라
                                                                                                                                                                                              SIX_LPI equ
                                                         귷.
                                                                                                                                                                                                                                                                                                           US_LETTER equ
US_LEGAL equ
N_TRACTOR equ
W_TRACTOR equ
CUSTOM equ
                                                                                                                                                             : PrintQuality
                                                                                                                                                                                        ; PrintSpacing
                                                                                                                                                  age.
                                                                                                                                                                                                                                           ; PrintAspect
ASPECT_HORIZ
                                          BAUD_110 equ
BAUD_300 equ
                                                                                                                                                                                                                                                                     : PrintShade
                                                                                                                              ; PrintPitch
                                                                                                                                                                                                                                                                                                     ; PaperStze
                                                       BAUD_1200
BAUD_2400
BAUD_4800
BAUD_9600
BAUD_19200
BAUD_19200
                                     BaudRate
                                                                                                                                                                     DRAFT
LETTER
                                                                                                                                    PICA
ELITE
FINE
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\* the FirstScreen variable points to the frontmost Screen. Screens are then maintained in a front to back order using Screen. NextScreen STRUCT 1b\_LibNode,LIB\_SIZE STRUCT 1b\_ViewLord,SIZEOF\_VIEW APTR 1b\_ActiveWindow \* there is not size here because... STRUCTURE IntuitionBase, 0 1b\_ActiveScreen APTR 1b\_FirstScreen --- IntuitionBase

When done call

; the following B bytes are not actually considered a part of the plant following B bytes are not actually considered a part of the planted bisher/loader, and the ReturnCode is the code at the beginning of the linker/loader and the ReturnCode is the code at the beginning of the font in case someone runs it...

i uLONG dfh.NextSegment actually a RFTS in UNOR dfh.ReturnCode is the DiskFontHeader...

STRUCT dfh.DF.IN\_SIZE incode to link disk fonts
UNORD dfh.ReturnCode incode to link disk fonts
UNORD dfh.ReturnCode incode to link disk fonts
UNORD dfh.Retuion incode to link disk fonts
STRUCT dfh.Neme.MAXFONTNAME ithe font name (mull terminated)
STRUCT dfh.Lame.MAXFONTNAME ithe font name (mull terminated)
STRUCT dfh.TF.tf.SIZEOF iloaded TextFont structure UMCRD fch\_NumEntries ; the number of FontContents elements LABEL fch\_FC ; the FontContents elements \$0f80
32 ; font name including ".font\0" ; including null terminator Dec 8 16:42 1985 libraries/diskfont.i Page 1 Commodore-Amiga, Inc STRUCTURE FC, 0
STRUCT fc\_F11eName, MAXEONIPATH "graphics/text.1" diskfont library definitions UNORD fch\_FileID ; FCH\_ID EXEC\_LISTS\_I "exec/lists.i" EXEC\_NODES\_I "exec/nodes.1" STRUCTURE DiskFontHeader, 0 IFND LIBRARIES\_DISKFONT\_1 CRAPHICS\_TEXT\_I diskfont.i \$0£00 256 STRUCT fc\_FileN UMORD fc\_YS1ze UBYTE fc\_Style UBYTE fc\_Flags STRUCTURE FCH, 0 EQU MAXEONTPATH EQU DEH\_ID EQU MAXEONTNAME EQU INCLUDE INCLUDE IFNO EGLID - E-66

Dec 8 16:42 1985 libraries/diskfont.i Page 2

57 LABEL dfh\_SIZEOF
58
59
60 BITDEF AF,MEMCRY,0
61 BITDEF AF,DISK,1
62
63 STRUCTURE AF,0
64 UMORD af\_Type ; MEMORY or DISK
65 STRUCT af\_Attr,ta\_SIZEOF; text attributes for font
66 LABEL af\_SIZEOF
67 IABEL af\_ATTRIBUTE AFH,0
69 UMORD afh\_NumEntries ; number of AvailFonts elements
70 LABEL afh\_AF ; the AvailFonts elements
71 ENDC

|                                      | •                                                                                           | * :   |                                                        | #II                                            |                                  |                                         |                                     | ete .                                                                                         | ton                                                                                                 | 411ty                                    |                                                                | •                                                                              | 1978<br>At                                                                                                                                      |
|--------------------------------------|---------------------------------------------------------------------------------------------|-------|--------------------------------------------------------|------------------------------------------------|----------------------------------|-----------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------------|----------------------------------------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
|                                      | nesatatonesatatonesatatonesatatonesatatonesatatonesatatonesatatonesatatonesatatonesata<br>A | dos.1 | Standard assembler header for Amiga DOS on the NC68000 |                                                |                                  | tents                                   | * Open existing file read/write     | positioned at beginning of tite.  * Open freshly created file (delete  * old file) read/write | * relative to Beginning Of File<br>* relative to Current file position<br>* relative to End Of File | OFFSET_BEGINNING * Ancient compatibility | 25<br>20<br>20<br>21                                           | File is readable by others<br>Synonym<br>No other access allowed<br>Synonym    | Number of days since Jan. 1, 19<br>Number of minutes past midnight<br>Number of ticks past minute<br>DateStamp<br>Number of ticks in one second |
| SET                                  | essessessessessesses<br>Commodors-Amins Tor                                                 |       | er for An                                              | s.1"                                           | e,                               | obal cons                               | 1005                                | 1006                                                                                          |                                                                                                     | OFFSET                                   | 8<br>4<br>32<br>\$7EFFEFF<br>\$80000000                        | 0 7777                                                                         |                                                                                                                                                 |
| Z 1                                  | 94000                                                                                       | -     | bead                                                   | C_TYPES_I<br>"exec/types.1"                    | rary'                            | 19                                      | to Open ()<br>EQU                   | EQU                                                                                           | to Seek ()<br>EQU -1<br>EQU 0<br>EQU 1                                                              | EQU                                      |                                                                | Lock ()<br>BQU<br>BQU<br>BQU<br>BQU<br>BQU<br>BQU                              | 0,0                                                                                                                                             |
| IFND LIBRARIES_DOS_I<br>RARIES_DOS_I | ***************************************                                                     | dos.1 | rd assembler                                           | IFND EXEC_TYPES_I<br>INCLUDE "exec/typ<br>ENDC | MACRO<br>.B 'dos.library',<br>DM | * Predefined Amiga DOS global constants | * Mode parameter to<br>MODE_OLDFILE | FILE                                                                                          | * Relative position<br>OFFSET BECINNING<br>OFFSET CURRENT<br>OFFSET END                             | ECINING                                  | YTTE<br>LONG<br>ONG                                            | as type to<br>OCK<br>EAD<br>E_LOCK<br>RITE                                     | STRUCTURE DateStamp,0 LONG da_Days LONG da_Minute LONG da_Tick LABEL ds_SIZEOF TICKS_PER_SECOND EQU 50                                          |
| IFND LIBRARI<br>LIBRARIES_DOS_I      | , , , , , , , , ,                                                                           |       | Standa                                                 |                                                | DOSNAME<br>DC.B<br>ENDM          | Predef                                  | Mode pu                             | NODE_NEWFILE                                                                                  | * Relative pos.<br>OFFSET RECINNI<br>OFFSET_CURRENT                                                 | OFFSET_BEGINING                          | BITSPERBYTE<br>BYTESPERIONG<br>BITSPERIONG<br>MAXINT<br>MININT | * Passed as ty<br>SHARED LOCK<br>ACCESS READ<br>EXCLUSIVE LOCK<br>ACCESS WRITE | STRUCTUI<br>LONG<br>LONG<br>LONG<br>LONG<br>LABEL<br>TICKS_PEI                                                                                  |

```
* Library interface offsets for DOS library
8 16:42 1985 libraries/dos_lib.i Page 1
                       Commodore-Amiga, Inc.
                                                                      -vsize* (reserve+1)
                                                                                       count-vs1ze
                                                                                                                                                                                                                                                                                                     IsInteractive
Execute
                                                                                                                                                                                                                                                                         SetProtection
                                                                                                                                                                                                                                                       QueuePacket
                                                                                                                                                                                                                                                                                          taltForChar
                                                                                                                                                           Deletefile
                                                                                                                                                                                                                                                              Dev1ceProc
                                                                                                                                                                                                               CurrentDir
                                                                                                                                                                                                                           CreateProc
                                                                                                                                                                                                                                     LoadSeg
UnLoadSeg
                                                                                                                                                                                                                                                                    SetComment
                                                                                                                                                                                                                                                                              DateStamp
                                                                                 count
                                                                                                                                                                                                                                                                                                ParentD1r
                                                                                                                                                                                                          CreateDir
                                                                                                                                                                                                                                                  GetPacket
                                                                                                                                                                                  Duplock
Examine
                                                                                                                                          Imput
Output
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                                                                                                                                                                  Jername
                                                                                                                                                                             UnLock
                                                                                                                                                                                              ExNext
                                                                                                                    Open
Close
Read
Write
                                                                                                                                                                                                                      OErr
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                                                                                                                                                                                                    [nfo
                                                                                                                                                                                                                                  Exit
                                                          EQU
EQU
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                                                                                                                                                                                                    LIBENT
                                                           reserve
                                                                     count
LIBENT
LVO\1
                                                                 vstze
                                                                            8
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```
* Something wrong
* Complete or severe failure
                                                                                                                                                                                                                                                                       convention by AmigaDOS commands
                                                                                                                                                                                                                                                                                      * No problems, success
                                                                                                                                                                                                                                                                                                                                Bit numbers that signal you that a user has issued a break BITDE SICHREAK,CTRL_C,12
BITDE SICHREAK,CTRL_D,13
BITDE SICHREAK,CTRL_E,14
BITDE SICHREAK,CTRL_E,14
                                                                                                                                                                                                                                                                                               A warning only
                     ('B'<24) | ('A'<16) | ('D'<8)
('N'<24) | ('D'<16) | ('O'<8) | ('S')
('D'<24) | ('O'<16) | ('S'<8)
('K'<24) | ('I'<16) | ('G'<8) | ('K')
                                                                                                                                                                                                                                                                        These are the return codes used by convent
See FAILAT and IF for relvance to EXECUTE
                                                                          * These are the return codes used
8 16:42 1985 libraries/dos.1 Page 3
                                                                                 ERROR OBJECT IN USE
ERROR OBJECT IN USE
ERROR OBJECT NOT FOUND
ERROR ACTION NOT KNOWN
ERROR INVALID COMPONENT NAME
ERROR INVALID LOCK
ERROR DISK NOT VALIDATED
ERROR DISK NOT VALIDATED
ERROR DISK NOT VALIDATED
ERROR DISK NOT VALIDATED
ERROR ERWER REWAWE ACROSS DEVICES
ERROR DEVICE NOT MOUNTED
ERROR SEEK ERROR
ERROR SEEK ERROR
ERROR OSS KEULL
ERROR DISK FULL
ERROR DISK FULL
                                                                   * Errors from IoErr(), etc
                                                                                                                                                                                                                                                                                                                                                                                      ENDC LIBRARIES_DOS_I
                                                                                                                                                                                                                        ERROR MRITE PROTECTED
                                                                                                                                                                                                                                                         ERROR NO MORE ENTRIES
                                                                                                                                                                                                                                        ERROR_NOT_A DOS_DISK
ERROR_NO_DISK
                        ID_UNREADABLE_DISK
                                  ID NOT REALLY DOS
                                         ID_DOS_DISK
ID_KICKSTART_DISK
                                                                                                                                                                                                                                                                                                  RETURN_WARN
RETURN_ERROR
RETURN_FAIL
                                                                                                                                                                                                                                                                                            RETURN OK
                          200
```

\$ \$4 \$ \$4 \$ do\_Type STIP TIP do Port dp\_Res2 do Resi do Arg2 \* Packet types STRUCTURE do\_Status2 do ButAddr do Action Device do\_Status LONG APIR LONG IS IS 200 I ONC SEC ES APTR SIC 100 101 102 103 104 105 106 1109 1110 8 Console handler process for current window Ptr to high memory end of process stack Value of secondary result from last ca \* All DOS processes have this STRUCTure \* Create and DeviceProc returns pointer to the MsgPort in this STRUCTure \* Process\_addr = DeviceProc(..) - TC\_SIZE This is RPTR address from DOS functions Remaining variables on 4 byte boundarie File handler process for current drive Function to be called when awaiting mag Array of seg lists used by this proces Lock associated with current directory Global vector for this process (BCPL) CLI task number of zero if not a CLI LIBRARIES DOSEXTENS\_I SET 1 Open() and other routines that return a file. You need only worry about this STRUCT to do async lo's via PutWsg() instead of pointer to ConsoleLineInterpreter pointer to previous stack frame Size of process stack in bytes The long word address (BPTR) of this STRUCTure is returned by Current CLI Output Stream Window pointer for errors Current CLI Input Stream DOS structures not needed for the casual DOS usen Process 8 16:42 1985 libraries/dosextens.1 Page 1 Commodore-Amiga, Inc NCLUDE "exec/libraries.1" STRUCTURE Process, 0
STRUCT pr\_Task, TC\_SIZE
STRUCT pr\_MsgPort, MP\_SIZE IFND LIBRARIES DOSEXTENS I INCLUDE "libraries/dos.1" ENDC pr\_FileSystemTask dosextens.1 INCLUDE "exec/types.1" INCLUDE "exec/ports.1" INCLUDE "exec/tasks.1" EXEC LIBRARIES I IFND LIBRARIES DOS I pr\_ConsoleTask pr\_TaskNum pr\_StackBase pr\_Result2 pr\_CurrentD1r pr\_ReturnAddr pr\_SeqList pr\_StackSize pr\_WindowPtr pr\_SIZEOF IEND EXEC\_TYPES\_I EXEC PORTS I EXEC TASKS I pr\_GlobVec pr\_PictMait pr\_CIS pr\_005 pr\_CLI EB RPTR LONG LONG LONG MORD LONG LONG  $^{6}$ 200

```
syst
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             'W' means Write to the file
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        function, e.g. Write ('W') returns actual
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   See ACTION... below and 'R' means Write to the fire for file system calls this is the result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    length written
For file system calls this is what would
have been returned by IoErr()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           * A Packet does not require the Message to before it in memory, but
* for convenience it is useful to associate the two.
* Also see the function init_std_pkt for initializing this STRUCTure
                                                                                                                                                                                                                                                                                                                                                                      Boolean; TRUE if interactive handle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             pointer to Reply port for the packet
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        that would have been returned by the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Must be filled in each send.
                                                                                                                                                                                                                                                                                                            pointer to EXEC message
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  This is the extension to EXEC Messages used by DOS
                                                                                                                                                                                                                                                                                                                                                                                                                 * Port to do PutMsg() to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             pointer to EXEC message
8 16:42 1985 libraries/dosextens.1 Page 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         equivalents
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STRUCT Sp. Msg, MN. SIZE
STRUCT Sp. Pkt, dp. SIZEOF
LABEL sp. SIZEOF * StandardPacket
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 fh_Arg2
fh_SIZEOF * FileHandle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ф.Args
ф.Args
ф.Arg7
ф.SIZEOF * DosPacket
                                                                                                                                                          standard file system calls
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STRUCTURE StandardPacket, 0
                                                                                                                                                                                                                                                                                                                 fh.Link
fh.Interactive
fh.Type
fh.Buf
fh.Pos
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   do_Arg1
packets comon
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EQU dp_Type
EQU dp_Res1
EQU dp_Res2
                                                                                                                                                                                                                                                                FileHandle, 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              functions of the function of t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LONG the Funcs
Funct EQU the Funcs
LONG the Func2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    de Argi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STRUCTURE DosPacket, 0
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| Dec 8 16:42 1985 libraries/dosextens.i Page 4 | 169 170 STRUCTURE DosInfo,0 171 BPTR di_McName                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | * DOS Processes started from the set to data associated with the STRUCTURE CommandLineInterface, 0 LONG cll_SetName BFTR cll_CommandNir * LONG cll_ReturnCode BSTR cll_CommandName LONG cll_ReturnCode BSTR cll_CommandName LONG cll_EallCavel BFTR cll_Prompt BFTR cll_Prompt BFTR cll_StandardImput * BFTR cll_CurrentImput | 191 BSTR cil_Command:ile Name of EACULE command ille 192 LONG cil_Background * Boolean True if prompts required 193 LONG cil_Background * Boolean True if CLI created by RUN 194 BFTR cil_CurrentOutput * Current CLI output 195 LONG cil_DefaultStack * Stack size to be obtained in long words 196 BFTR cil_Module * Sealist of currently loaded command 197 BFTR cil_Module * CommandLineInterface 198 LABEL cil_SIZEOF * CommandLineInterface | * this structure needs some work. It shoul * it can take on different valued depending * an assigned directory, or a volume. * For now, it reflects a volume. * STRUCTURE Devilist, 0  BPTR dl_Next LONG dl_Type APTR dl_Task STRUCT dl_VolumeDate, ds_SIZEOF; orest BPTR dl_LockList; )  STRUCT dl_VolumeDate, ds_SIZEOF; outst                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 214 ICNC dl_DiskType ; 'DCS', etc 215 ICNC dl_unused ; bptr to bcpl name 216 BSTR dl_Name ; bptr to bcpl name 217 ILABEL DevList_SIZEOF 218 * definitions for dl_Type 220 DLT_DIRECTORY EQU 1 221 DLT_DIRECTORY EQU 1 nLT_VOLUME EQU 2 |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8 16:42 1985 libraries/dosextens.i Page 3     | 113   ACTION_NIL   EQU   0   114   ACTION_CET_BLOCK   EQU   2   2   115   ACTION_CET_MAP   EQU   4   5   116   ACTION_DIE   EQU   5   117   ACTION_CURRENT_VOLUME   EQU   6   119   ACTION_LOCARE_OBJECT   EQU   8   120   ACTION_RENAME_DISK   EQU   9   120   ACTION_RENAM |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ACTION_SET_COMMENT EQU ACTION_TIMER EQU ACTION_TIMER EQU ACTION_DISK_TYPE EQU ACTION_DISK_CHANGE EQU                                                                                                                                                                                                                                                                                                                                              | 143  144 * DOS Library node structure.  145 * This is the data at positive offsets from the library node.  146 * Negative offsets from the node is the jump table to DOS functions  147 * node = (STRUCT DOSLibrary *) OpenLibrary("dos.library")  148  149 STRUCTURE DosLibrary.0  150 STRUCT dl.lib.Lib.SIZE  151 APTR dl.Root * Pointer to RootNode, described below * Pointer to BCPL global vector * Pointer to BCPL g | STRUCTURE RootNode, 0  150  STRUCTURE RootNode, 0  161  BPTR rn_TaskArray                                                                                                                                                              |

additiopal

```
Dec 8 16:42 1985 libraries/doceatens.1 Page 5

225 * a lock structure, as returned by Lock() or Duplock()

226 STRUCTURE Filadock, 0 bepl pointer to next lock

227 EDG filadock, 1 disk block number

228 LOW filadock, 1 disk block number

229 LOW filadock, 1 disk block number

230 LOW filadock, 1 disk block number

231 EPTR filadock, 1 handler task's port to a DeviceList

232 LAMEL filadock

233 EMDC LIREARIES_DOSENTENS_I
```

| 2Z                                                                                                                                                                       | ,               |                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------------------------|
|                                                                                                                                                                          | _               | IEND RESOURCES_DISK_I                         |
|                                                                                                                                                                          | _               | OURCES_DISK_I SET 1                           |
|                                                                                                                                                                          |                 | Commodore-Amicas Inc.                         |
|                                                                                                                                                                          |                 | disk.i                                        |
|                                                                                                                                                                          |                 | 化化妆品的名词复数化化化化化化化化化化化化化化化化化化化化化化化化化化化化化化化化化化化化 |
|                                                                                                                                                                          |                 |                                               |
|                                                                                                                                                                          |                 |                                               |
|                                                                                                                                                                          | •               | xternal declarations for disk resources       |
|                                                                                                                                                                          | * •             |                                               |
|                                                                                                                                                                          | . 4             | CONTROL                                       |
|                                                                                                                                                                          | *               | disk.1,v 27.3 85/07/12 23:17:43 nell Exp      |
|                                                                                                                                                                          | • •             |                                               |
|                                                                                                                                                                          |                 | trocker: •                                    |
| # # # # #                                                                                                                                                                |                 |                                               |
|                                                                                                                                                                          | 19              |                                               |
|                                                                                                                                                                          | 8 5             | EAEC_11FES_1<br>MP "eyec/types                |
|                                                                                                                                                                          | 7 77            | EXEC_TYPES_I                                  |
|                                                                                                                                                                          | 23              |                                               |
| 4 4 4 4                                                                                                                                                                  | <b>4</b> 2 4    |                                               |
| * * * *                                                                                                                                                                  | 1 %             | ā                                             |
| * * * * *                                                                                                                                                                | 72              |                                               |
| 4 4 4 4                                                                                                                                                                  | 9 62            | DE "exec/ports                                |
| * * * * *                                                                                                                                                                | 8               | RXEC_PORTS_I                                  |
| * * * * *                                                                                                                                                                | 32              | EXEC_INTERRUPTS_I                             |
| * * * *                                                                                                                                                                  | 33              | DE "exec/interrupts                           |
| * * * * *                                                                                                                                                                | <b>#</b>        |                                               |
| * * * * *                                                                                                                                                                | S X             | TYPC LIPRARIES I                              |
| * * * * *                                                                                                                                                                | 8 %             | DE "exec/libraries                            |
|                                                                                                                                                                          | 8               | !EXEC_LIBRARIES_I                             |
| ****                                                                                                                                                                     |                 |                                               |
| * * * *                                                                                                                                                                  | *               |                                               |
|                                                                                                                                                                          | *               |                                               |
|                                                                                                                                                                          | •               |                                               |
|                                                                                                                                                                          |                 |                                               |
| STRUCTURE DISCRESOURCEUNIT, NN_SIZE STRUCT DRU_DISCRLOCK, IS_SIZE STRUCT DRU_INDEX, IS_SIZE LABEL DRU_INDEX, IS_SIZE STRUCTURE DRU_SIZE STRUCTURE DISCRESOURCE, LIB_SIZE |                 |                                               |
| STRUCT DRU_DISCRIOCK, IS_SIZE STRUCT DRU_INDEX, IS_SIZE LABEL DRU_SIZE STRUCTURE DISCRESOURCE, LIB_SIZE                                                                  | \$ <del>2</del> |                                               |
| STRUCT DRU_INDEX.IS_SIZE LABEL DRU_SIZE STRUCTURE DISCRESOURCE, LIB_SIZE                                                                                                 | <b>8</b>        |                                               |
| LABEL DRU_SIZE STRUCTURE DISCRESOURCE, LIB_SIZE                                                                                                                          | 649             |                                               |
| STRUCTURE DISCRESOURCE, LIB. SIZE                                                                                                                                        | S 15            |                                               |
| STRUCTURE DISCRESOURCE, LIB_SIZE                                                                                                                                         | 27              |                                               |
| STRUCTURE DISCRESOURCE, LIB_SIZE                                                                                                                                         | <u>8</u> .4     |                                               |
| ADTR DR CHRRENT : pointer to current unit                                                                                                                                | 55              | 5                                             |

|                                                                                   |                              | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dec 12 18:08 1985 resources/clabase.1 Page 1  *********************************** | CIA Resource Data Definition | STRUCTURE CIAR, LIB_SIZE  WATR  UNIVER  UNIVER  UNIVER  UNIVER  UNIVER  UNIVER  UNIVER  STRUCT  CA_INVALIN, IV_SIZE  STRUCT  CA_INVALIN, IV_SIZE  STRUCT  CA_INVALIN, IV_SIZE  STRUCT  CA_INVALIN, IV_SIZE  STRUCT  CA_INVELO, IV_SIZE  IABEL  CA_SIZE  CA_SIZE  IABEL  CA_SIZE  IABEL  CA_SIZE  IABEL  CA_SIZE  CA_SIZE  CA_SIZE  CA_SIZE  CA_SIZE  CA_SIZE  CA_SIZE  CA_SIZE |
|                                                                                   |                              | - E-72 -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

Dec 8 16:42 1985 resources/disk.1 Page 3 \$00000000 \$5555555 \$EFFFFFF \* drive types DRT\_AMICA DRT\_37422D2S DRT\_EMPTY ENDC 1113 1116 1116 1119 1120 1121 123

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Dec 8 16:43 1985 resources/Misc.1 Page 2

S7 EMC RESOURCE\_MISC\_1

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| <pre>14 " 1900.1 external declarations for workbench support library 13 4</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |
| 14 * SOURCE CONTROL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |    |
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| 31 DC.B 'icon.library'.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |    |
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| WEDRAMER EQU 2 WEGARBAGE EQU 3 WEGARBAGE EQU 5 WEGARBAGE EQU 5 WEGARBAGE EQU 5 WEDGVICE EQU 7 WEDGVICE EQU 7 STRUCTURE DrawerData, 0 STRUCTURE DrawerData, 0 STRUCT ded LowerData, 0 LONG ded CurrentX ; LONG ded CurrentX ; LONG ded MinX ; LONG ded MaxX ; LONG ded MaxX ;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| WEDRAMER EQU 2 WEDRAME EQU 3 WEGARBAGE EQU 5 WEGARBAGE EQU 5 WEDEVICE EQU 6 WEKICK EQU 7 The main workbench object a STRUCTURE DrawerData, 0 STRUCT dd_NewMindow, nw_S LONG dd_CurrentX ; LONG dd_MinX ; LONG dd_MaxX ; LONG dd_MaxX ;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| WEDRAMER EQU 2 WEDRAME EQU 3 WEGARBAGE EQU 5 WEGARBAGE EQU 5 WEDEVICE EQU 6 WEKICK EQU 7 The main workbench object a STRUCTURE DrawerData, 0 STRUCT dd_NewMindow, nw_S LONG dd_CurrentX ; LONG dd_MinX ; LONG dd_MaxX ; LONG dd_MaxX ;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

| 16:43 1985 workbench/startup.i Page 1  *** startup.i ************************************                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | IRND EXEC_TYPES.1  ENDC IEXEC_TYPES.1  INCLUDE "exec_types.1"  IRND EXEC_PORTS.1  INCLUDE "exec_types.1"  IRND EXEC_PORTS.1  INCLUDE "inhardes of a standard message structure of the process descriptor for your code and humber of a standard message structure of the process descriptor for your code in the process descriptor for your code in the process descriptor for your code in the second in the process descriptor for your code in the second in the second in the process description of vindow in the second in |  |
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      $6310 ; a magic number, not easily impersonated
                                                                                                                                                                                                                                                                                                              do_Magic ; a magic num at the start of the file do_Version ; a version number, so we can change it
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               list of drawer members
list of all selected objects
function specific linkages
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    all objects are on this list
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         number of references to this obj
                                                                                                                     ; pointer to drawers window
; back pointer to drawer object
SIZE ; where our children hang out
                                                                                                                                                                                                                                                                                                                                               do_Gadget, gg_SIZEOF ; a copy of in core gadget
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          what flavor object is this?
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       only applies to tools only applies to tools
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          where to put the name
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 ; our current version number
                                                                                                                                                                                                                        the amount of DrawerData actually written to disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; weird name to avoid conflicts with FileLocks LABEL FreeList_SIZEOF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      object flags -- see below for definitions
                                                                                                                                                                                                                                           EQU (nw_SIZE+2*(4))
                                                  dd Horizimage, ig SizeOF
                                 dd_RightMove, gg_SIZEOF
                                                                  dd_Vertimage, ig_SIZEOF
dd_HorizProp,pi_SIZEOF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    wo_UtilityNode, LN_SIZE
   dd DownMove, gg_SIZEOF
                 dd LeftMove, gg SIZEOF
                                                                                                     dd_VertProp,pl_SIZEOF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Wo MasterNode, LN SIZE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  wo_SelectNode, LN_SIZE
                                                                                                                                                         dd_Children, LN_SIZE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Wo_Siblings, LN_SIZE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            fl Mentist, LH SIZE
                                                                                                                                                                                                                                                                                                                                                                                  do DefaultTool
                                                                                                                                                                                                                                                                                                                                                                                                                                   do_CurrentY
do_DrawerData
do_ToolWindow
do_StackSize
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       wo_NameXOffset
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                                                                                                                     dd DrawerWin
                                                                                                                                                                                                                                                                                                                                                                                                do_ToolTypes
                                                                                                                                                                                                                                                                                            STRUCTURE DiskObject, 0
                                                                                                                                                                                                                                                                                                                                                                                                                   do_CurrentX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Wo_UseCount
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          fl Numbres
                                                                                                                                         dd_Object
                                                                                                                                                                                          dd SIZEOF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRUCTURE FreeList, 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STRUCTURE WBObject, 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       do_SIZEOF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        wo Flags
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                                                                                                                                                                          dd Lock
                                                                                                                                                                                                                                                                                                                                                                   do_Type
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WB_DISKWERSION EQU
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```
* each message that comes into the WorkBenchPort must have a type field
* in the preceeding short. These are the defines for this type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          the horizontal scroll gadget for a drawer
                                     wo_CurrentX ; virtual X in drawer
wo_CurrentY ; virtual Y in drawer
wo_CurrentY ; virtual Y in drawer
wo_Cadget,gg_ZIZZEC ; NOT a ptr, but an instance of it
wo_FreeList_FreeList_SIZECE ; this objects free list
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          the vertical scroll gadget for a drawer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             worldench does different complement modes for its gadgets. It supports separate images, complement mode, and backfill mode. The first two are identical to intuitions GADGIMAR and GADGECORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if an icon does not really live anywhere, set its current position
                                                                                                                 LSIZECE ; this objects free list character string for tool's window
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     backfill is similar to GADCHOMP, but the region outside of the image (which normally would be color three when complemented)
                                                                                                                                                      how much stack to give to this if this tool is in the backdrop
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     to encode some special information
                                                                                                                                                                                                                                                                     we're a drawer, and it is open
our icon is selected
set if icon is in background
                      each object's icon lives here
                                                                                                                                                                                                                                                       ; icon is currently in a window
                                                                                                                                                                                                                                                                                                                                                                                                                                                                exit message from our tools dos telling us of a disk change we got a timer tick <unimplemented>
if this is a drawer or disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      the name field for an object
                                                                                                                                                                                                                                                                                                                                                                                                                                         a "standard Potion" mossage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a normal worldench object
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 move one window right
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               move one window left
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      move one window down
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    move one window up
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                <unimplemented>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ($80000000)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            is flood-filled to color zero.
                                                                                                                                                                                                                              : workbench object flags
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   $0001
                                                                                                                                                                                                                                                                     MO, DrawerOpen, 6
MO, Selected, 5
                                                                                                                                                                                                                                                                                                              WO, Background, 4
                                                                                                                                                                                                                                                                                                                                                                                                                                                Wo DrawerData
                                                                                                                                    wo ToolWindow
                                                                                                                                                                                                                                                     WO, IconDisp, 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1464567
                                                                                                                                                       Wo_StackSize
                     Wo_IconWin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                we use the gadget 1d
                                                                                                                                                                                           WO_SIZEOF
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MIYPE_CLOSEDOWN
MIYPE_IOPROC
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CID_DOMNSCROLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CID_VERTSCROLL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CID LEFTSCROLL
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W DefaultIcol



### Appendix F

Exec Support Library

end

NEWLIST a0

rts

```
INCLUDE "exec/types.i"
INCLUDE "exec/nodes.i"
INCLUDE "exec/lists.i"
INCLUDE "exec/libraries.i"
INCLUDE "exec/ports.i"
INCLUDE "exec/jo.i"
```

section \_BeginI0
xdef \_BeginI0

### \_BeginIO:

move.l 4(sp),al BEGINIO rts

end

```
Exec Support Functions -- Ports and Messages
**********************
#include "exec/types.h"
#include "exec/nodes.h"
#include "exec/lists.h"
#include "exec/memory.h"
#include "exec/interrupts.h"
#include "exec/ports.h"
#include "exec/libraries.h"
#include "exec/tasks.h"
#include "exec/execbase.h"
extern APTR AllocMem();
extern UBYTE AllocSignal();
extern struct Task *FindTask();
struct MsgPort *CreatePort (name, pri)
   char *name;
   BYTE pri;
{
   UBYTE sigBit;
   struct MsgPort *port;
   if ((sigBit = AllocSignal (-1)) == -1)
       return ((struct MsgPort *) 0);
   port = AllocMem ((ULONG) sizeof (*port), MEMF_CLEAR | MEMF_PUBLIC);
   if (port == 0) {
       FreeSignal (sigBit);
       return ((struct MsgPort *) (0));
   }
   port -> mp_Node.ln_Name = name;
   port -> mp_Node.ln_Pri = pri;
   port -> mp_Node.ln_Type = NT_MSGPORT;
   port -> mp_Flags = PA_SIGNAL;
   port -> mp_SigBit = sigBit;
   port -> mp_SigTask = FindTask (0);
   if (name != 0)
       AddPort (port);
   else
       NewList (&(port -> mp_MsgList));
   return (port);
}
```

```
DeletePort(port)
    struct MsgPort *port;
{
    if ((port -> mp_Node.ln_Name) != 0)
        RemPort (port);

    port -> mp_Node.ln_Type = 0xff;
    port -> mp_MsgList.lh_Head = (struct Node *) - 1;

    FreeSignal (port -> mp_SigBit);

    FreeMem (port, (ULONG) sizeof (*port));
}
```

```
Exec Support Functions -- Standard IO Requests
**********************
#include "exec/types.h"
#include "exec/nodes.h"
#include "exec/lists.h"
#include "exec/memory.h"
#include "exec/interrupts.h"
#include "exec/ports.h"
#include "exec/libraries.h"
#include "exec/io.h"
#include "exec/tasks.h"
#include "exec/execbase.h"
extern APTR AllocMem();
×
   NAME
      CreateStdIO() -- create a standard IO request
   SYNOPSIS
      ioStdReq = CreateStdIO(ioReplyPort);
   FUNCTION
      Allocates memory for and initializes a new IO request block.
   INPUTS
      ioReplyPort - a pointer to an already initialized
             message port to be used for this IO request's
             reply port.
   RESULT
      Returns a pointer to the new block. Pointer is of the type:
      struct IOStdReg
      0 indicates inability to allocate enough memory for either
      the request block.
   EXAMPLE
      struct IOStdReq *myBlock;
      if( (myBlock = CreateStdIO(myPort)) == NULL)
             printf("Insufficient memory or not enough signals!");
   SEE ALSO
      DeleteStdI0
*******************
struct IOStdReq *CreateStdIO(ioReplyPort)
   struct MsgPort *ioReplyPort;
{
   struct IOStdReq *ioStdReq;
```

```
if (ioReplyPort == 0)
       return ((struct IOStdReq
                              *) 0);
   ioStdReq = AllocMem (sizeof (*ioStdReq), MEMF_CLEAR | MEMF_PUBLIC);
   if (ioStdReq == 0)
       return ((struct IOStdReq *) 0);
   ioStdReq -> io_Message.mn_Node.ln_Type = NT_MESSAGE;
   ioStdReq -> io_Message.mn_Node.ln_Pri = 0;
   ioStdReq -> io_Message.mn_ReplyPort = ioReplyPort;
   return (ioStdReq);
}
NAME
       DeleteStdIO(ioStdReq) - return memory allocated for IO request
   SYNOPSIS
       DeleteStdIO(ioStdReq);
   FUNCTION
       See summary line at NAME. Also frees the signal bit which
       had been allocated by the call to CreateStdIO.
   INPUTS
       A pointer to the IOStdReq block whose resources are to be freed.
   RESULT
       Frees the memory. Returns (no error conditions shown)
   EXAMPLE
       struct IOStdReq *myBlock;
       DeleteStdIO(myBlock);
   SEE ALSO
       CreateStdI0
*********************
DeleteStdIO(ioStdReq)
   struct IOStdReq *ioStdReq;
{
   ioStdReq -> io_Message.mn_Node.ln_Type = 0xff;
   ioStdReq -> io_Device = (struct Device *) -1;
   ioStdReq -> io_Unit = (struct Unit *) -1;
   FreeMem (ioStdReq, sizeof (*ioStdReq));
}
```

```
#include "exec/types.h"
#include "exec/nodes.h"
#include "exec/lists.h"
#include "exec/memory.h"
#include "exec/interrupts.h"
#include "exec/ports.h"
#include "exec/libraries.h"
#include "exec/tasks.h"
#include "exec/execbase.h"
extern APTR AllocMem();
extern struct Task *FindTask();
    Create a task with given name, priority, and stack size.
   It will use the default exception and trap handlers for now.
*/
struct Task *CreateTask(name, pri, initPC, stackSize)
    char *name;
    UBYTE pri;
    APTR initPC;
    ULONG stackSize;
{
    struct Task *newTask;
    ULONG dataSize = (stackSize & Oxfffffc) + 1;
     * This should be broken into two allocations: task of PUBLIC
     * and stack of PRIVATE
     */
    newTask = AllocMem ((ULONG) sizeof (*newTask) + dataSize,
                                  MEMF_CLEAR | MEMF_PUBLIC);
    if (!(ULONG) newTask) {
        return ((struct Task *) (0));
    }
    newTask -> tc_SPLower = (APTR)((long) newTask + (long) sizeof (*newTask));
    newTask -> tc_SPUpper = (APTR)(((ULONG)(newTask -> tc_SPLower) + dataSize)
                                  & Oxfffffe);
    newTask -> tc_SPReg = (APTR) ((long) (newTask -> tc_SPUpper));
    newTask -> tc_Node.ln_Type = NT_TASK;
    newTask -> tc_Node.ln_Pri = pri;
    newTask -> tc_Node.ln_Name = name;
    AddTask (newTask, initPC, 0);
    return (newTask);
}
DeleteTask(tc)
    struct Task *tc;
    RemTask (tc); /* does not handle self deletion properly */ FreeMem (tc, 1 + (ULONG) (tc \rightarrow tc_SPUpper) - (ULONG) tc);
} .
```



```
Exec Support Function -- Extended IO Request
*******************
#include "exec/types.h"
#include "exec/nodes.h"
#include "exec/lists.h"
#include "exec/memory.h"
#include "exec/interrupts.h"
#include "exec/ports.h"
#include "exec/libraries.h"
#include "exec/io.h"
#include "exec/tasks.h"
#include "exec/execbase.h"
extern APTR AllocMem();
*
   NAME
*
      CreateExtIO() -- create an Extended IO request
*
   SYNOPSIS
      ioReq = CreateExtIO(ioReplyPort, size);
*
   FUNCTION
      Allocates memory for and initializes a new IO request block
      of a user-specified number of bytes.
   INPUTS
      ioReplyPort - a pointer to an already initialized
             message port to be used for this IO request's reply port.
   RESULT
      Returns a pointer to the new block. Pointer is of the type
      struct IORequest.
      0 indicates inability to allocate enough memory for the request block
      or not enough signals available.
   EXAMPLE
      struct IORequest *myBlock;
      if( (myBlock = CreateExtIO(myPort, sizeof(struct IOExtTD)) == NULL)
             exit(NO_MEM_OR_SIGNALS);
      example used to allocate space for IOExtTD (trackdisk driver
      IO Request block for extended IO operations).
   SEE ALSO
      DeleteExtIO
  *********************
struct IORequest *CreateExtIO(ioReplyPort,size)
```

```
Dec 6 12:43 1985 CreateExtIO.c Page 2
    struct MsgPort *ioReplyPort;
    LONG size;
{
    struct IORequest *ioReq;
    if (ioReplyPort == 0)
       return ((struct IORequest
                                 *) 0);
    ioReq = (struct IORequest *)AllocMem (size, MEMF_CLEAR | MEMF_PUBLIC);
    if (ioReq == 0)
       return ((struct IORequest
                                 *) 0);
    ioReq -> io_Message.mn_Node.ln_Type = NT_MESSAGE;
    ioReq -> io_Message.mn_Node.ln_Pri = 0;
    ioReq -> io_Message.mn_ReplyPort = ioReplyPort;
   return (ioReq);
NAME
       DeleteExtIO() - return memory allocated for extended IO request
   SYNOPSIS
       DeleteExtIO(ioReq, size);
*
   FUNCTION
       See summary line at NAME. Also frees the signal bit which
       had been allocated by the call to CreateExtIO.
   INPUTS
       A pointer to the IORequest block whose resources are to be freed.
   RESULT
       Frees the memory. Returns (no error conditions shown)
   EXAMPLE
       struct IORequest *myBlock;
       DeleteExtIO(myBlock, (sizeof(struct IOExtTD)));
       example shows that CreateExtIO had been used to create a trackdisk
       (extended) IO Request block.
   SEE ALSO
       CreateExtI0
*************
DeleteExtIO(ioExt, size)
   struct IORequest *ioExt;
   LONG size:
{
   ioExt -> io_Message.mn_Node.ln_Type = 0xff;
```

```
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ioExt -> io_Device = (struct Device *) -1;
ioExt -> io_Unit = (struct Unit *) -1;

FreeMem (ioExt, size);
```

### TABLE OF CONTENTS

debug.lib/KDoFmt;
debug.lib/KGetChar;
debug.lib/KMayGetChar;
debug.lib/KPutChar;
debug.lib/KPutFmt;
debug.lib/KPutStr;

### INTRODUCTION

This section outlines the routines available in the debug.lib.

The debug.lib is a linked-library rather than a shared library. You link to it at compile/link time rather than opening a library. This link-library becomes a physical part of your program code.

Routines that are described in the ROM Kernel manual as well as those listed here, can be called directly from tasks. Routines that are listed in the Lattice C manual, such as printf, and scanf for example, should only be called from a process, rather than from a task in that they require a process model in order to function. A process is started when you ask AmigaDOS to run your program. Any part of main() or any routines it calls become part of that process. If your program spawns any tasks on its own, to have those tasks execute any process-dependent code, the tasks should either send messages back to the main program, which in turn executes the appropriate code, or use these debug routines if the programmer has connected a 9600 baud device to the Amiga's serial port.

To start the debug mode correctly, you can set the serial port parameters by calling

romwack

from a CLI. Then, from the external terminal, type

go

The port is now set up and ready to go. The debug print and get-character routines will function as described below.

debug.lib/KDoFmt

debug.lib/KDoFmt

NAME

KDoFmt -- format data into a character stream.

SYNOPSIS

KDoFmt (FormatString, DataStream, PutChProc, PutChData);
A0 A1 A2 A3

**FUNCTION** 

perform "C"-language-like formatting of a data stream, outputting the result a character at a time

**INPUTS** 

FormatString - a "C"-language-like null terminated format string, with the following supported % types:

DataStream - a stream of data that is interpreted according to the format string.

PutChProc - the procedure to call with each character to be output, called as:

PutChProc (Char, PutChData); D0-0:8 A3

the procedure is called with a null Char at the end of the format string.

PutChData - an address register that passes thru to PutChProc.

```
debug.lib/KGetChar
```

debug.lib/KGetChar

NAME

KGetChar - get a character from the debug-console (a 9600 baud device attached to the serial port of the Amiga.)

SYNOPSIS

char = KGetChar();
D0

**FUNCTION** 

get the next character from the debug-console device.

### debug.lib/KMayGetChar

debug.lib/KMayGetChar

NAME

SYNOPSIS

flagChar = KMayGetChar();
D0

**FUNCTION** 

return either a  $\ -1$ , saying that there is no char present, or the char that was waiting

```
debug.lib/KPutChar
```

debug.lib/KPutChar

NAME

SYNOPSIS

**FUNCTION** 

put a character to the debug-console device.

debug.lib/KPutFmt

debug.lib/KPutFmt

NAME

SYNOPSIS

KPutFmt(format, values);
A0 A1

**FUNCTION** 

print formatted data to the debug-console device

debug.lib/KPutStr

debug.lib/KPutStr

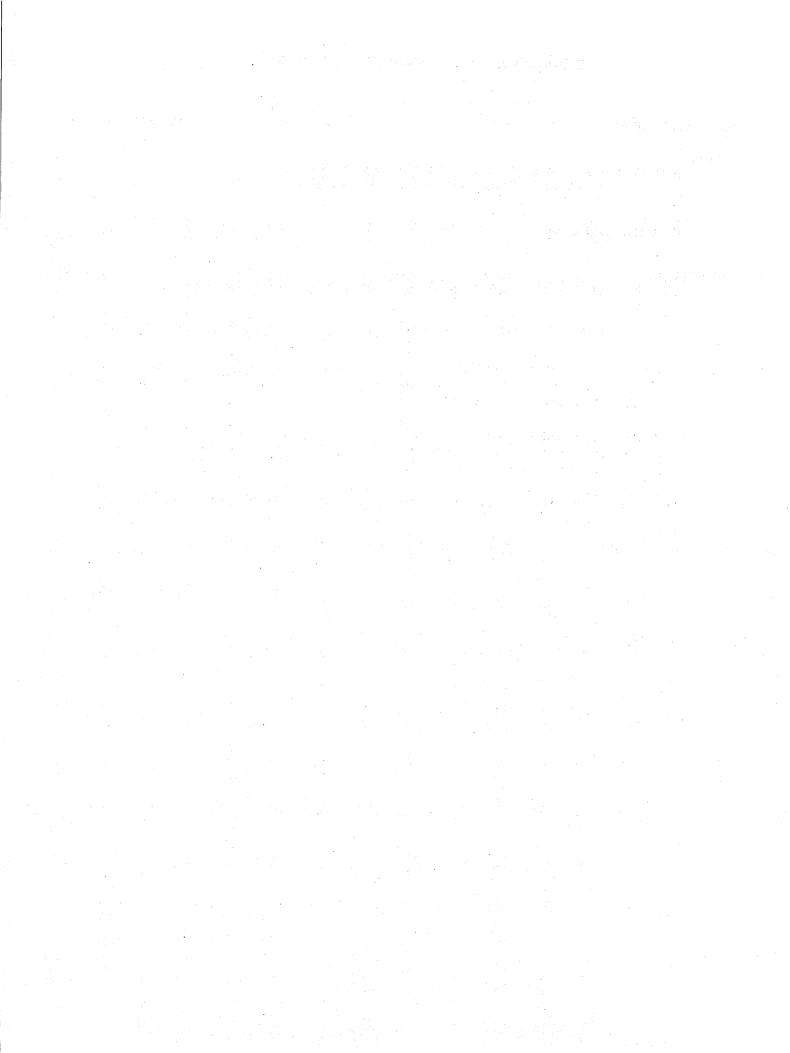
NAME

SYNOPSIS

KPutStr (string) A0

**FUNCTION** 

put a null terminated string to the debug-console device.



### Appendix G

### **AmigaDOS Topics**

The Amiga ROM Kernel Manual has become somewhat more that just a document covering the ROM Kernel. The name has been kept for historical reasons even though, as of this writing, the "ROM" software loads into kickstart RAM.

Certain topics were not available as of the most recent revision of the AmigaDOS manuals and are, therefore, included here to assure that Amiga developers will have the latest available information on these topics.

These DOS-related topics, which are additional information for the AmigaDOS Technical Reference Manual, are outlined on the following pages.

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## Chapter 4: AmigaDOS General Information

This chapter describes certain topics which are likely to be of interest to the advanced developer who may wish to create new devices to be added to the Amiga or who wish their code to run with Amiga computers which have been expanded beyond a 512k memory size.

The following topics are covered here:

Overlay Hunk Description

for developers putting together large programs

ATOM utility

works on a new binary file format to change allow developer to set the appropriate load bits.
Assures that program code and data that must be readdent in CHIP memory (the lowest 512k of the system) for the program to function will indeed be placed there by AmigaDOS when it is loaded. Otherwise the program code may not work on an extended memory machine.

Linking in a new DISK-device to AmigaDOS lets a developer add a hard-disk or disk-like device as a name-addressable part of the filing system

Linking in a new non-disk-device to AmigaDOS
lets a developer add such things as additional
serial ports, parallel ports, graphics tablets,
ram-disks or what-have-you to AmigaDOS
(non filing system related).

Using AmigaDOS without using Intuition for developers who may prefer to install and use their own screen handling in place of that provided by Intuition.

## HUNK OVERLAY TABLE - OVERVIEW

When overlays are used, the linker basically produces one very large file containing all of the object modules as hunks of relocatable code. The hunk overlay table contains a data structure that describes the hunks and their relationship to each other.

When you are designing a program to use overlays, you must keep in mind how the overlay manager (also called the overlay supervisor) handles the interaction between the various segments of the file. What you must do, basically, is build a tree that reflects the relationships between the various code modules that are a part of the overall program and tell the linker how this tree should be constructed.

The hunk overlay table is generated as a sets of 8 longwords, each describing a particular overlay node that is part of the overall file. Each 8 longword entry is comprised of the following data:

# HUNK OVERLAY SYMBOL TABLE-ENTRY DATA STRUCTURE:

long seekOffset; /\* where in the file to find this node \*/
long dwmmy;
/\* a value of 0 ... compatibility item \*/
long dwmmy;
/\* a value of 0 ... compatibility item \*/
long dwmmy;
/\* a value of 0 ... compatibility item \*/
long dwmmy;
/\* item number at that level \*/
long firstHunk; /\* hunk number of the first hunk containing
\* this node. \*/
long symbolikunk; /\* the hunk number in which this symbol is
\* located \*/
long symboloffsetX; /\* (offset \* 4), where offset is the offset
\* within the symbol hunk at which this
\* symbol's entry is located. \*/

Each of these items is explained further in the sections that follow.

### DESIGNING AN OVERLAY TREE

If you have, for example, the files: main, a, b, c, d, e, f, g, h, i and j. Lets say that main can call a,b,c, and d and that each of these files can call main. Additionally lets say that routine e can be called from a,b,c,d or main, but has no relationship to routine f. Thus, if a routine in e is to be run, then a,b,c, and d need to be memory resident as well. Routine f is like e; that is, it needs nothing in e to be present, but can be called from a, b, c, or d. This means that the overlay manager can share the memory espace between routines e and f, since neither need ever be memory coresident with the other in order to run.

If you consider routine g to share the same space as the combination of a,b,c, and d and routines h,i and j sharing the same space, you have the basis for constructing the overlay tree for this program structure:

Not only have we drawn the tree, but we have labeled its branches to match the hunk overlay (level, ordinate) numbers that are found in the hunk overlay table that matches the nodes to which they are assigned.

From the description above, you can see that if main is to call any routine in program segment a-d, then all of those segments should be resident in memory at the same time. Thus they have all been assigned to a single node by the linker. While a-d are resident, if you call routines in e, the linker will automatically load routine e from disk, and reinitialize the module (each time it is again brought in), so that its subroutines will be available to be run. If any segment a-d calls a routine in f, the linker replaces e with the contents of f and initializes it.

Thus a-d are at level 1 in the overlay tree, and routines e and f are at level 2, requiring that a-d be loaded before e or f can be accessed and loaded for execution.

NOTE: A routine can only perform calls to routines in other nodes which either are currently memory resident (the ancestors of the node in which the routine now in use is located), or a routine in a direct child node. That is, main cannot call e directly, but e can call routines in main since main is an ancestor.

Note also that within each branch of each subnode, for a given level, the ordinate numbers begin again with number 1.

### DESCRIBING THE TREE

You create the tree by telling the overlay linker about its structure. The numerical values, similar to those noted in the figure above, are assigned sequentially by the linker itself and appear in the hunk node table. Here is the sequence of overlay link statements that cause the figure above to be built:

OVERLAY a,b,c,d

•

o.€

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This description tells the linker that a,b,c,d are part of a single node at a given level (in this case level 1), and the asterisk in front of e and f each say that these are one each on the next level down from a-d, and accessible only through a-d or anything closer towards the root of the tree. The name g has no asterisk, so it is considered on the same level as a-d, telling the linker that either a-d or g will be memory resident, but

The above paragraphs have explained the origin of the hunk node level and the hunk ordinate in the hunk overlay symbol-table.

### SEEK OFFSET AMOUNT

The first value for each node in the overlay table is the seek offset. As specified earlier, the overlay linker builds a large single file containing all of the overlay nodes. The seek offset number is that value that can be given to the seek(file, byte\_offset) routine to point to the first byte of the hunk header of a node.

### INITIALHUNK

The initialHunk value in the overlay symbol-table is used by the overlay manager when unloading a node. It specifies the initial hunk that must have been loaded in order to have loaded the node that contains this symbol. When a routine is called at a different level and ordinate, (unless it is a direct, next level, child of the current node, it will become necessary to free the memory utilized by invalid hunks, so as to make room to overlay with the hunk(s) containing the desired symbol.

## SYMBOLHUNK AND SYMBOLOFFSETX

These table entries for the symbols are used by the overlay manager to actually locate the entry point once it has either determined it is already loaded or has loaded it. The symbolHunk shows in which hunk to locate the symbol. SymbolOffsetX-4 shows the offset from the start of that hunk at which the entry point is actually located.

(Alink Temporary Object Modifier) ---- ATOM: ----

This document describes the ATOM utility, including its development history, the manner in which it has been implemented, and alternatives to its use.

The "problem":

Programmers need/want to be able to specify that parts of their program go into "chip" memory (the first 512k) so that the custom chips can access it. They also need/want to treat this data just like any other data in their program and therefore have it link and load normally.

Previous solutions:

The recommended way of dealing with this was to do an Allochem with the chip memory bit set and copy data from where it was loaded ("fast" memory) to where it belonged (chip memory), then use pointers to get to it. This involved having two copies of your data in memory, the first loaded with your program, the second copied into the first 512k of memory. The other "solution" is to have the program not run in machines with more than 512k. This should quickly become an unacceptable solution.

The ATOM solution:

1) Compile or assemble normally

- 2) Pass the object code through a post (or pre) processor called "AIOM". AIOM will interact with the user and the object file(s). It will flag the desired hunks (or all hunks) as "for chip memory" by changing the hunk type.
- The old types were hunk code, hunk data, and hunk bas. linker will now take nine (9) hunk types instead of 3. hunk\_code\_chip ones will be: Dev 8 ଳ

= hunk\_code + bit 30 set = hunk\_code + bit 31 set = hunk\_data + bit 30 set = hunk\_data + bit 31 set = hunk\_bss + bit 30 set = hunk\_bss + bit 31 set hunk code fast hunk\_data\_chip hunk\_data\_fast hunk\_bss\_chip hunk bss\_fast

The linker will pass all hunk types through to the LOADER, (coagulating if necessary). The LOADER uses the hunk

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header information when loading.

and BSS hunks contained uninitialized linker documentation that CODE hunks contain executable (68000) machine language, DATA hunks contain initialized (ou will recall from the information provided in the data (arrays, variable declorations, ...). (constants, ...) data

- above. Hunks will go into the designated memory type. 4) The LOADER will load according to information from step 3)
- 5) Old versions of the LOADER will interpret the new hunk types as VERY large hunk and not load (error 103, not enough memory).

Future Solutions:

The assembler and Lattice "C" may be changed to generate the new hunk types under programmer control.

How the bits work:

address space machines, the upper 2 bits are unused. The Bits The hunk size is a word containing the number of words in the hunk. Therefore for the foreseeable future including 32 bit have been redefined as follows:

MEME\_EAST MEME\_CHIP +-- B1t30 B1t31 -----+

If neither bit is set then get whatever memory is available, this is "backwards" compatible.
Preference is given to "Fast" memory.
Loader must get FAST memory, or fail.
Inder must get CHIP memory, or fail.
If Bit31 and Bit30 are both set then there is

extra information available following this long word. This is reserved for future expansion, as needed. It is not currently used.

Perceived impact:

extended memory, if poorly programmed. The "previous solutions" mentioned at the beginning of this chapter still hold. run through Old programs, programs that have not been compiled of assembled with the new options, and programs that have not been ATCH will run (or not) as well as ever. This includes

EXACILY the same loop you have now... edit, compile, link, execute, test, edit,... UNTIL you are about to release. Then you edit, compile, ATOM, Alink, add external memory (>512k) and test. This works well for all three environments (Amiga, IBM and Program development and test on a 512k machine could follow

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For native (Amiga) development on a >512k machine you may want to ATCM the few required object files so you can both run your linked program in an extended memory machine and take advantage of a large RAM: disk. The development cycle then becomes: edit, compile, optionally ATCM (if this code or data contains items needed by the blitter), link, extente, test, edit...

"New programs" will not load in a VI.0 Kickstart environment. The result will be error 103, not enough memory.

Old (V1.0 and before) versions of dumpobj and OMD will not work on files after ATOM has been run on them.

Working Environment:

To get all of this to work together you need Release 1.1 compatible coples of:

AIOM (Version 1.0 or later)

Alink (Version 3.30 or later) Kickstart (Release 1.1 or later) for DOS LOADER. DumpObj (Version 2.1) Needed If you wish to examine programs modified by ATCH

AICM Command Line Syntax:

The command line syntax is:

ATCM <infile> <outfile> [-I]

ATON (Infiles (-C[C[D[B]] [-F[C[D[B]] [-P[C[D[B]]

Where: <infile>

(Any type of memory Represents an object file, just compiled, assembled or ATCMed (Yes you can re-ATCM The destination for the converted file. Change memory to CHIP Change memory to FAST Change memory to "Public". Change CODE hunks Change DATA hunks Change BSS hunks an object file. available.) coutfile> ረ ት ት

Command Line Examples:

Example #1 In most cases there is no need to place CODE hunks in chip memory. Sometimes DATA and BSS hunks do need to

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be placed in chip memory, therefore the fillowing is a fairly common usage of ATCM. To cause all Code hunks go into Public RAM, Data and BSS hunks to go into chip

ATOM infile.obj outfile.obj -pc -cdb

Example #2 To cause all the hunks in object file to be loaded into chip memory type: ATCM infile.obj outfile.obj

To set all data hunks to load into chip memory type: atom myfile.o myfile.set.o -cd Example #3

Example #4
This is an interactive example. User input is in lower computer output is in upper case. In this example the code hunk is set to "Fast", the data hunk is set to "Chip". There were no BSS hunks. Note that help was requested in the beginning.

CBBO

2> atom from.o from.set -1 AMIGA OBJECT MODIFIER V1.0

MEMORY ALLOCATION PUBLIC DISPLAY SYMBOLS? [Y/N] Y UNIT NAME FROM HUNK NAME NOME HUNK TYPE CODE

(Note: code hunk)

xcovf. base.

CC022.

printf. main.

(Note: request for help) MEMORY TYPE? [FICIP] ?

Please enter F for fast C for Chip P for Public

W to windup quit

(cancels the operation, no

-- Memory type.

N for Next hunk

(skip this hunk, show next)

output file is created} {does not change the rest of the file, just passes it through}

MEMORY TYPE? [FICIP] f

UNIT NAME 0000 HUNICHAME NONE HUNK TYPE DATA MEMORY ALLOCATION PUBLIC

(Note: data hunk)

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DISPLAY SYMBOLS? [Y/N]

MEMORY TYPE? [FICIP] c

UNIT NAME 0000 HUNKAYE NONE HUNK TYPE BSS

MEMORY ALLOCATION PUBLIC

DISPLAY SYMBOLS? [Y/N] y

MENORY TYPE? [FICIP] p

Error Messages:

Error Bad Args:

a) An option does not start with a "-"
b) wrong number of parameters Wrong number of parameters "-" not followed by I, C, F or P. -x supplied in addition to -I

etcetera

Error Bad infile:

File not found.

File can not be created. Error Bad Outfile:

##: ATOM has detected a hunk type that it does not recognize. The object file may be corrupt. Error Bad Type

Error empty input: Imput file does not contain any data.

Error ReadExternals: External reference or definition if of an undefined type. Object file may be corrupt.

Error premature end of file: An end of file condition (out of data) was detected while ATCM was still expecting Imput. Object file may be corrupt.

Error This utility can only be used on files that have NOT

been passed through ALINK:

The input file you specified has already been processed by the linker. External symbols have been removed and hunks coagulated. You need to run ATOM on the object

files produced by the C compiler or Macro Assembler BEFCRE they are linked.

Document date: 20-Nov-1985

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Making New Disk Devices

To create a new disk device, you must construct a new device node as described in section 3.3.1 of the AmigaDos Technical manual. You must also write a device driver for the new disk device.

performed by the trackdisk device (described in the Amiga ROM Kernel manual). It must include the ability to respond to commands such as read, write, seek, and return status information in the same way as described for the trackdisk driver. A device driver for a new disk device must mimic the calls that are

For the following description, note that most pointers are of the type HPTR (as described in the AmigaDOS Technical Reference Manual), a machine pointer to some longword-aligned memory location(such as returned by AllocMem), shifted right by two.

Construct the new node with the following fields:

Global vector dt\_device Task Stacksize Priority Handler Next Š BPTR to startup info BSTR to name Seglist

The BSTR to a name is a BCPL pointer to the name of your new device (such as HD0:) represented as the length of the string in the first byte, and the characters following.

The Seglist must be the segment list of the filling system task. To obtain this, you must access a field in the process base of one of the filling system tasks.

The code as follows can be used for this purpose:

UBYTE \*port;

port = DeviceProc( "DF0:"); /\* Returns msg port of filesystem task \*/
task = (struct Task \*) (port-sizeof(struct Task);

/\*Task structure is below port \*/
list = ( task.pr\_Seglist ) << 2; /\* make machine ptr from SegArray
segl = list[3]; /\* Third element in SegArray is filesystem seglist</pre>

Next, you must set up the startup info (again, remember to use EPTRs where needed). This info consists of a EPTR to three long words which contain:

- Unit number (do not use unit zero) Davice driver name, stored as a RPTR to the device driver name.

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which must be terminated by a null byte which is included in the count (e.g.,  $4/1H^{1/1}D^{1/10}/0$ ) BFTR to disk information

The disk size information contains the following longword fields:

| Size of table | Disk block size in long words<br>(assuming 512-byte blocksize) | Sector origin (1.e., first sector is sector zero) | (e.g., 2 for floppy disk) | Number of sectors per block | (e.g., 11 for floppy disk)    | <pre>(or more, indicating number of blocks to be reserved at start)</pre> | Presllocation factor | Interleave factor | (commonly 0)              | (e.g., 79 for floppy dlak) |
|---------------|----------------------------------------------------------------|---------------------------------------------------|---------------------------|-----------------------------|-------------------------------|---------------------------------------------------------------------------|----------------------|-------------------|---------------------------|----------------------------|
| 11            | 128                                                            | 0                                                 | Number of surfaces        | 1                           | Number of blocks<br>per track | 7                                                                         | •                    | •                 | Lowest cylinder<br>number | Highest cylinder<br>number |

Finally, the device node must be attached to the end of the list (note the Next fleids are all BPTRs) of device nodes within the Info substructure. WaRNING: the list to which this refers is NOT the same kind of list that is referenced in the Exec portion of the Amiga ROM Kernel manual, but is instead the kind of list described in the AmigaDOS Technical Reference Manual.

(or more, indicating number of cache blocks)

To partition a hard disk, you make two or more device nodes and set the lowest and highest cylinder numbers to partition the disk as desired.

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Creating a New Device to Run under AmigaDOS

This section provides information about adding devices that are NOT part of the DOS filling system. The next section provides information about adding file-system-related devices (hard-disks, floppy disks), that is, devices that DOS can use to read and write files with their associated directories.

You would want to use this information to add a new device such as a new serial port or a new parallel port. In this case you may be creating a device named "SER2:" which is to act just like "SER:" as far as DOS is concerned.

There are two steps involved here. First, you must create a suitable device, a process that is not addressed here. Note: The code for creating a skeleton disk-resident device is contained in the Amiga ROM Kernel Manual.

Second, you must make this new device available as an AmigaDOS device. This process involves writing a suitable device handler (see ROM Kernel Manual) and installing it into the AmigaDOS structures.

This installation is handled by creating a suitable device node structure for your new device. This is similar to creating a Devinfo slot for a new disk device, except that the start-up argument can be anything you want, the Segment list slot is zero, and the file name of your disk-resident device handler is placed in the Filename slot.

o dt\_device
1 Task (or process id - see below)
2 Lock
BSTR Filename of handler code
NNN Stacksize required
NN Priority required
XXX Startup information
0 Segiist (nonzero if you load the code)
0 Global vector required
BSTR Device Name

The device handler is the interface between your device and an application program. This is normally written in BCPL, and the AmigaDOS kernel will attempt to load the code of the handler and create a new process for it when it is first referenced. This is handled automatically when the kernel notices that the Task field in the DevInfo structure is zero. If the code is already loaded, the code agament pointer is placed in the SegList field. If this field is zero, the kernel loads the code from the filename given in the Filename field and updates the SegList field.

If you want this automatic loading and process initialization to work, you must create a code module, which is written in BCPL or is written in assembler to look like a BCPL module. This ensures that the dynamic linking used by the loarnel will work correctly.

If you are writing in assembler, the format of the code section must be as shown below. Note that you may use DATA and BSS sections, but

```
LET open = FALSE // flag to show whether device has been "opened"
// with act.findimput or act.findoutput
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              outpkt!pkt.type := act.write
impkt!pkt.type := act.read
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             returnpkt (parm.pkt, TRUE)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      nodeldev.task := taskid()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CASE act.findimput:
CASE act.findoutput:
$( LET scb = plpkt.arg1
open := TRUE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SWITCHON pipkt.type INTO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                nodeldev.task := 0
open := FALSE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 $( LET p = taskwait()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            returnpkt (p, IRUE)
                                                                                                                                                                                                                                                                                  IF error THEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CASE act.read:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CASE act.end:
                                                                                                                                                                                                                                                                                                                              return
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               // When the task is created, the parameter packet contains
// the following.
// parm.pkt.pkt.argl = EPTR to ECPL string of device name, i.e. ("SKEL:")
// parm.pkt.pkt.arg2 = extra info (if needed)
// parm.pkt.pkt.arg3 = EPTR to device info node
                                                     Size of module in lwords
                                                                                                                     Align to lword boundary
End marker
                                                                                                                                                                                                                                                                                                                          If you are writing in BCPL, a skeleton routine will appear as follows. The main job of the device handler is to convert Open, Read, Write, and Close requests into the device read and write requests. Other
                                                                                                                                                             Define Global 1
Offset of entry point
Highest global used
                                                                                                                                                                                                                                                             In assembler, you will be started with register Di holding a BCPL pointer to the initial packet passed from the kernel.
each section must have same format as described here.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IO.blocksize = 30 // size of devices IO block
                                                                                                                                                                                                                                                                                                                                                                                                                                    // "Include files containing useful constants"
                                               (EndModule-StartModule)/4
                                                                                                                                                                                 EntryPoint-StartModule
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         // This is a handler for a skeleton Task
                                                                                                                                                                                                                                                                                                                                                                                              packet types are marked as an error.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LET openstring = parm.pktlpkt.arg1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LET extrainfo = parm.pkt!pkt.arg2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LET error = FALSE
LET devname = "serial.device*X00"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Inplot = VEC plc.res1
outplct = VEC plct.res1
IOB = VEC IO.blocksize
IOBO = VEC IO.blocksize
                                                                                             (your code)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LET start(parm.pkt) BE
$(
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LET read.pkt = 0
LET write.pkt = 0
                                           DC.L
                                                                                                         DC.L. DC.L. BC.L. BC.L. BC.L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CET "EXECTEDR"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "IOEDR"
                                           StartModule
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LET implet
LET outplet
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CET "LIBEDR"
                                                               EntryPoint
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LET IOBO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MANIFEST
```

```
// Insert process id into device node
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             // Close
// Remove process id from device node
                                                                                                                                                                 IF OpenDevice (IOB, devname, 0, 0 ) = 0 THEN error := TRUE
                                                                                                                                                                                                                                                                                                                                       // Copy all the necessary info to the Output buffer too.
                                              // Zero the block first so that we can see what goes // into it when we call Opendevice
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                // This is the main repeat loop waiting for an event
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          // Read request returning
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   // Finished with parameter packet...send back...
                                                                                                                                                                                                                                          $ (returnpkt (parm.pkt, FALSE, error, objectinuse)
                                                                                                                                                                                                                                                                                                                                                                                      FOR 1=0 TO IO.blocksize DO IOBO11 := IOB11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        .....scb.id := TRUE // Interactive
returnpkt(p.TRUE)
LOOP
                                                                                                                   FOR 1=0 TO IO.blocksize DO IOB11 := 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        uado //
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LET node = parm.pkt!pkt.arg3
```

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// A read request

// A write request

CloseDevice ( 10B ) // Termination

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//Remove process id unless open

s) REPEATWHILE open | outpkt = 0 | impkt = 0

UNLESS open DO nodeldev.task := 0

// Handle an IO request. Passed command, transmission packet (tp) // and request packet (rp). rp contains buffer and length in arg2/3. AND handle request (IOB, command rp, tp ) BE LET buff = rplpkt.arg2
LET len = rplpkt.arg3
Set10( 108, command, ?, rplpkt.arg3, 0 )
putlong ( 100, 10.data, buff )
SendIO(108, tp )

// Handle a returning IO request. The user request packet is // passed as p, and must be returned with success/failure message. AND handle.return(IOB, p ) BE // No error LET len = getlong( IOB, IO.actual ) TEST errcode = 0 THEN returnpkt (p. len )

returnpkt(p, -1, errcode)

€

If you wish to write your device handler in C, you cannot use the automatic load and process creation provided by the kernel. In this case, you must load the code yourself and use a call to CreateProc to create a process. The result from this call should be stored in the Task field of

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the Devinfo structure. You must then send a message to the new process to get it started. This message might contain such things as the unit number of the device involved. The handler process should then wait for Open, Read, Write, and Close calls and handle them as described in the example above. C code does not need to insert the process id into the device node because this is done when code is loaded, as described above.

// Write request returning

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Using AmigaDOS Without Workbench/Intuition

This information is provided to give developers some information about how AmigaDOS and intuition interact with each other. As of this writing, it is not possible to fully close down intuition or the input device. It is possible to install one sown input handler within the input stream (as is demonstrated in the Amiga ROW Kernel Manual, Input Device description) and thereby handle input events yourself, after your program has been loaded and started by AmigaDOS. If, after that point, you take over the machine in some manner, you can prevent AmigaDOS from trying to put up system requesters or otherwise interacting with the screen by modifying DOS as shown below. Basically, your own program must provide alternate ways to handle errors that would normally cause DOS to put up a requester.

Another alternative for taking over the machine is to ignore the AmigaDOS filling system altogether, and use the trackdisk device to boot your code and data on your own. You will find defails about the disk boot block and the track formatting in the Amiga ROM Kernel Manual, allowing this alternate means if you so choose.

Here are the details about AmigaDOS and Intuition:

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AmigaDOS initializes itself and opens Intuition. It then attempts to open the configuration file (created by Preferences) and passes this to Intuition. It then opens the initial CLI window via Intuition and attempts to run the first CLI command. This is commonly a loadwb (load Workbench), followed by an endcli on the initial CLI.

An application program can be made to behave like Workbench, in that it spawns off a new process. The next CLI command is then endcli, which closes everything down, leaving only the new process running (along with the filesystem processes). This process would set the pr\_WindowPtr field to -1, which indicates that the DOS should report errors quietly. Note that the application MIST handle all errors. There are further details on this in the AmigaDOS Technical manual, chapter 3. DOS will also have initialized the TrapHandler field of the user task to point to code that will display a requester after an error; this should be replaced by a user-provided routine. This will stop all uses of Intuition from the in which case DOS will call Exec Alert directly.

There is still the problem that the filesystem processes may ask for a requester, in the event of a disk error or if the filesystem task crashes due to memory corruption. To stop this, the pr\_MindowPtr and tc\_TrapHandler fields of the filesystem tasks must be set to -1 and a private Trap handler must be provided in the same way as was done for the user task. This is easily done as shown below.

Find the message port for each filesystem task by calling DeviceProc(), passing DE0, DE1, etc. An error indicates that the device is not present. From the message port you can find the task base for each filesystem task, and hence patch these two slots. This should be repeated for each disk unit.

The application program can now close Intuition. Worldench has, of

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course, never been invoked. Note that as of this writing, it is not possible to stop DOS from opening intuition.

Note that if the application want to use any other device such as SER:, the handler process must be patched in exactly the same way as the file-ystem processes. The application should obviously not attempt to open the CON: or RAW: once Intuition has become inactive.

# Appendix H

# IFF Interchange File Format

This appendix contains a document developed jointly by Commodore-Amiga and Electronic Arts.

The document contained here includes source code for routines that will both read and write this data format.

Commodore-Amiga has adopted this data interchange file format for our internal use and we recommend that our developers adopt it as well.

|  |   | * |
|--|---|---|
|  | • |   |
|  |   |   |

# INFORMATION ABOUT COMPILING THESE ROUTINES:

Electronic arts apparently keeps a bunch of includes in a file called "graphics/system.h".

This is the contents of that include-file:

```
#include exec/types.h
#include exec/exec.h
#include graphics/gfx.h
#include graphics/gfxbase.h
#include graphics/copper.h
#include graphics/regions.h
#include graphics/regions.h
#include hardware/blit.h
#include intuition/intuition.h
#include intuition/intuitionbase.h
#include libraries/dos.h
```

OFFSET\_BEGINNING in iffr.c and iffw.c must be changed to OFFSET\_BEGINING. It is spelled differently in libraries/dos.h.

In Ilbmr.c (p.3) there is a call to UnPackRow:

UnPackRow(&buf, \*pDest, nFilled, srcRowBytes)

nFilled and srcRowBytes are defined as int and LONG. The function expects WORD and WORD. To compile with native Lattice required:

UnPackRow(&buf, \*pDest, (WORD)nFilled, (WORD)srcRowBytes)

# "EA IFF 85" Standard for Interchange Format Files

Document Date:

November 15, 1985

From:

Jerry Morrison, Electronic Arts

Status of Standard:

Released and in use

# 1. Introduction

# Standards are Good for Software Developers

As home computer hardware evolves to better and better media machines, the demand increases for higher quality, more detailed data. Data development gets more expensive, requires more expertise and better tools, and has to be shared across projects. Think about several ports of a product on one CD-ROM with 500M Bytes of common data!

Development tools need standard interchange file formats. Imagine scanning in images of "player" shapes, moving them to a paint program for editing, then incorporating them into a game. Or writing a theme song with a Macintosh score editor and incorporating it into an Amiga game. The data must at times be transformed, clipped, filled out, and moved across machine kinds. Media projects will depend on data transfer from graphic, music, sound effect, animation, and script tools.

# Standards are Good for Software Users

Customers should be able to move their own data between independently developed software products. And they should be able to buy data libraries usable across many such products. The types of data objects to exchange are open-ended and include plain and formatted text, raster and structured graphics, fonts, music, sound effects, musical instrument descriptions, and animation.

The problem with expedient file formats—typically memory dumps—is that they're too provincial. By designing data for one particular use (e.g. a screen snapshot), they preclude future expansion (would you like a full page picture? a multi-page document?). In neglecting the possibility that other programs might read their data, they fail to save contextual information (how many bit planes? what resolution?). Ignoring that other programs might create such files, they're intolerant of extra data (texture palette for a picture editor), missing data (no color map), or minor variations (smaller image). In practice, a filed representation should rarely mirror an in-memory representation. The former should be designed for longevity; the latter to optimize the manipulations of a particular program. The same filed data will be read into different memory formats by different programs.

The IFF philosophy: "A little behind-the-scenes conversion when programs read and write files is far better than NxM explicit conversion utilities for highly specialized formats."

So we need some standardization for data interchange among development tools and products. The more developers that adopt a standard, the better for all of us and our customers.

# Here is "EA IFF 1985"

Here is our offering: Electronic Arts' IFF standard for interchange File Format. The full name is "EA IFF 1985". Alternatives and justifications are included for certain choices. Public domain subroutine packages and utility programs are available to make it easy to write and use IFF-compatible programs.

Part 1 introduces the standard. Part 2 presents its requirements and background. Parts 3, 4, and 5 define the primitive data types, FORMs, and LISTs, respectively, and how to define new high level types. Part 6 specifies the top level file structure. Appendix A is included for quick reference and Appendix B names the committee responsible for this standard.

# References

American National Standard Additional Control Codes for Use with ASCII, ANSI standard 3.64-1979 for an 8-bit character set. See also ISO standard 2022 and ISO/DIS standard 6429.2.

Amiga™ is a trademark of Commodore-Amiga, Inc.

<u>Compiler Construction, An Advanced Course</u>, edited by F. L. Bauer and J. Eickel (Springer-Verlag, 1976). This book is one of many sources for information on recursive descent parsing.

<u>DIF Technical Specification</u> © 1981 by Software Arts, Inc. DIF<sup>TM</sup> is the format for spreadsheet data interchange developed by Software Arts, Inc. DIF<sup>TM</sup> is a trademark of Software Arts, Inc.

Electronic Arts™ is a trademark of Electronic Arts.

"FTXT" IFF Formatted Text, from Electronic Arts. IFF supplement document for a text format.

Inside Macintosh © 1982, 1983, 1984, 1985 Apple Computer, Inc., a programmer's reference manual. Apple® is a trademark of Apple Computer, Inc. Macintosh™ is a trademark licensed to Apple Computer, Inc.

"ILBM" IFF Interleaved Bitmap, from Electronic Arts. IFF supplement document for a raster image format.

M68000 16/32-Bit Microprocessor Programmer's Reference Manual © 1984, 1982, 1980, 1979 by Motorola, Inc.

PostScript Language Manual © 1984 Adobe Systems Incorporated. PostScript™ is a trademark of Adobe Systems, Inc.

Times and Helvetica® are trademarks of Allied Corporation.

InterScript: A Proposal for a Standard for the Interchange of Editable Documents © 1984 Xerox Corporation.

Introduction to InterScript © 1985 Xerox Corporation.

# 2. Background for Designers

Part 2 is about the background, requirements, and goals for the standard. It's geared for people who want to design new types of IFF objects. People just interested in using the standard may wish to skip this part.

# What Do We Need?

A standard should be long on prescription and short on overhead. It should give lots of rules for designing programs and data files for synergy. But neither the programs nor the files should cost too much more than the expedient variety. While we're looking to a future with CD-ROMs and perpendicular recording, the standard must work well on floppy disks.

For program portability, simplicity, and efficiency, formats should be designed with more than one implementation style in mind. (In practice, pure stream I/O is adequate although random access makes it easier to write files.) It ought to be possible to read one of many objects in a file without scanning all the preceding data. Some programs need to read and play out their data in real time, so we need good compromises between generality and efficiency.

As much as we need standards, they can't hold up product schedules. So we also need a kind of decentralized extensibility where any software developer can define and refine new object types without some "standards authority" in the loop. Developers must be able to extend existing formats in a forward-and backward-compatible way. A central repository for design information and example programs can help us take full advantage of the standard.

For convenience, data formats should heed the restrictions of various processors and environments. E.g. word-alignment greatly helps 68000 access at insignificant cost to 8088 programs.

Other goals include the ability to share common elements over a list of objects and the ability to construct composite objects containing other data objects with structural information like directories.

"Simple things should be simple and complex things should be possible."

# Think Ahead

Let's think ahead and build programs that read and write files for each other and for programs yet to be designed. Build data formats to last for future computers so long as the overhead is acceptable. This extends the usefulness and life of today's programs and data.

To maximize interconnectivity, the standard file structure and the specific object formats must all be general and extensible. Think ahead when designing an object. It should serve many purposes and allow many programs to store and read back all the information they need; even squeeze in custom data. Then a programmer can store the available data and is encouraged to include fixed contextual details. Recipient programs can read the needed parts, skip unrecognized stuff, default missing data, and use the stored context to help transform the data as needed.

# Scope

IFF addresses these needs by defining a standard file structure, some initial data object types, ways to define new types, and rules for accessing these files. We can accomplish a great deal by writing programs according to this standard, but don't expect direct compatibility with existing software. We'll need conversion programs to bridge the gap from the old world.

IFF is geared for computers that readily process information in 8-bit bytes. It assumes a "physical layer" of data storage and transmission that reliably maintains "files" as strings of 8-bit bytes. The standard treats a "file" as a container of data bytes and is independent of how to find a file and whether it has a byte count.

This standard does not by itself implement a dipboard for cutting and pasting data between programs. A dipboard needs software to mediate access, to maintain a "contents version number" so programs can detect updates, and to manage the data in "virtual memory".

## **Previous Work**

Where our needs are similar, we borrow from existing standards.

Our basic need to move data between independently developed programs is similar to that addressed by the Apple Macintosh desk scrap or "clipboard" [Inside Macintosh chapter "Scrap Manager"]. The Scrap Manager works closely with the Resource Manager, a handy filer and swapper for data objects (text strings, dialog window templates, pictures, fonts...) including types yet to be designed [Inside Macintosh chapter "Resource Manager"]. The Resource Manager is a kin to Smalltalk's object swapper.

We will probably write a Macintosh desk accessory that converts IFF files to and from the Macintosh clipboard for quick and easy interchange with programs like MacPaint and Resource Mover.

Macintosh uses a simple and elegant scheme of 4-character "identifiers" to identify resource types, clipboard format types, file types, and file creator programs. Alternatives are unique ID numbers assigned by a central authority or by hierarchical authorities, unique ID numbers generated by algorithm, other fixed length character strings, and variable length strings. Character string identifiers double as readable signposts in data files and programs. The choice of 4 characters is a good tradeoff between storage space, fetch/compare/store time, and name space size. We'll honor Apple's designers by adopting this scheme.

"PICT" is a good example of a standard structured graphics format (including raster images) and its many uses [Inside Macintosh chapter "QuickDraw"]. Macintosh provides QuickDraw routines in ROM to create, manipulate, and display PICTs. Any application can create a PICT by simply asking QuickDraw to record a sequence of drawing commands. Since it's just as easy to ask QuickDraw to render a PICT to a screen or a printer, it's very effective to pass them between programs, say from an illustrator to a word processor. An important feature is the ability to store "comments" in a PICT which QuickDraw will ignore. Actually, it passes them to your optional custom "comment handler".

PostScript, Adobe's print file standard, is a more general way to represent any print image (which is a specification for putting marks on paper) [PostScript Language Manual]. In fact, PostScript is a full-fledged programming language. To interpret a PostScript program is to render a document on a raster output device. The language is defined in layers: a lexical layer of identifiers, constants, and operators; a layer of reverse pollsh semantics including scope rules and a way to define new subroutines; and a printing-specific layer of built-in identifiers and operators for rendering graphic images. It is clearly a powerful (Turing equivalent) image definition language. PICT and a subset of PostScript are candidates for structured graphics standards.

A PostScript document can be printed on any raster output device (including a display) but cannot generally be edited. That's because the original flexibility and constraints have been discarded. Besides, a PostScript program may use arbitrary computation to supply parameters like placement and size to each operator. A QuickDraw PICT, in comparison, is a more restricted format of graphic primitives parameterized by constants. So a PICT can be edited at the level of the primitives, e.g. move or thicken a line. It cannot be edited at the higher level of, say, the bar chart data which generated the picture.

PostScript has another limitation: Not all kinds of data amount to marks on paper. A musical instrument description is one example. PostScript is just not geared for such uses.

"DIF" is another example of data being stored in a general format usable by future programs [DIF Technical Specification]. DIF is a format for spreadsheet data interchange. DIF and PostScript are both expressed in plain ASCII text files. This is very handy for printing, debugging, experimenting, and transmitting across moderns. It can have substantial cost in compaction and read/write work, depending on use. We won't store IFF files this way but we could define an ASCII alternate representation with a converter program.

InterScript is Xerox' standard for interchange of editable documents [Introduction to InterScript]. It approaches a harder problem: How to represent editable word processor documents that may contain formatted text, pictures, cross-references like figure numbers, and even highly specialized objects like mathematical equations? InterScript aims to define one standard representation for each kind of information. Each InterScript-compatible editor is supposed to preserve the objects it doesn't understand and even maintain nested cross-references. So a simple word processor would let you edit the text of a fancy document without discarding the equations or disrupting the equation numbers.

Our task is similarly to store high level information and preserve as much content as practical while moving it between programs. But we need to span a larger universe of data types and cannot expect to centrally define them all. Fortunately, we don't need to make programs preserve information that they don't understand. And for better or worse, we don't have to tackle cross-references yet.

# 3. Primitive Data Types

Atomic components such as integers and characters that are interpretable directly by the CPU are specified in a format most convenient for the Motorola MC68000 processor [M68000 16/32-Bit Microprocessor Programmer's Reference Manual].

N.B.: Part 3 dictates the format for "primitive" data types where—and only where—used in the overall file structure and standard kinds of chunks (Cf. Chunks). The number of such occurrences will be small enough that the costs of conversion, storage, and management of processor-specific files would far exceed the costs of conversion on-the-fly by "foreign" programs. A particular data chunk may be specified with a different format for its internal primitive types or with processor- or environment-specific variants if necessary to optimize local usage. Since that hurts data interchange, it's not recommended. (Cf. Designing New Data Sections, in Part 4.)

# **Alignment**

All data objects larger than a byte are aligned on <u>even</u> byte addresses relative to the start of the file. This may require padding. Pad bytes are to be written as zeros, but don't count on that when reading.

This means that every odd-length "chunk" (see below) <u>must</u> be padded so that the next one will fall on an even boundary. Also, designers of structures to be stored in chunks should include pad fields where needed to align every field larger than a byte. Zeros should be stored in all the pad bytes.

Justification: Even-alignment causes a little extra work for files that are used only on certain processors but allows 68000 programs to construct and scan the data in memory and do block I/O. You just add an occasional pad field to data structures that you're going to block read/write or else stream read/write an extra byte. And the same source code works on all processors. Unspecified alignment, on the other hand, would force 68000 programs to (dis)assemble word and long-word data one byte at a time. Pretty cumbersome in a high level language. And if you don't conditionally compile that out for other processors, you won't gain anything.

# Numbers

Numeric types supported are two's complement binary integers in the format used by the MC68000 processor—high byte first, high word first—the reverse of 8088 and 6502 format. They could potentially include signed and unsigned 8, 16, and 32 bit integers but the standard only uses the following (in C):

# Characters

The following character set is assumed wherever characters are used, e.g. in text strings, IDs, and TEXT chunks (see below).

Characters are encoded in 8-bit ASCII. Characters in the range NUL (hex 0) through DEL (hex 7F) are well defined by the 7-bit ASCII standard. IFF uses the graphic group " " (SP, hex 20) through "~" (hex 7E).

Most of the control character group hex 01 through hex 1F have no standard meaning in IFF. The control character LF (hex 0A) is defined as a "newline" character. It denotes an intentional line break, that is, a

paragraph or line terminator. (There is no way to store an automatic line break. That is strictly a function of the margins in the environment the text is placed.) The control character ESC (hex 1B) is a reserved escape character under the rules of ANSI standard 3.64-1979 <u>American National Standard Additional Control Codes for Use with ASCII</u>, ISO standard 2022, and ISO/DIS standard 6429.2.

Characters in the range hex 7F through hex FF are not globally defined in IFF. They are best left reserved for future standardization. But note that the FORM type FTXT (formatted text) defines the meaning of these characters within FTXT forms. In particular, character values hex 7F through hex 9F are control codes while characters hex A0 through hex FF are extended graphic characters like Å, as per the ISO and ANSI standards cited above. [See the supplementary document "FTXT" IFF Formatted Text.]

# **Dates**

A "creation date" is defined as the date and time a stream of data bytes was created. (Some systems call this a "last modified date".) Editing some data changes its creation date. Moving the data between volumes or machines does not.

The IFF standard date format will be one of those used in MS-DOS, Macintosh, or Amiga DOS (probably a 32-bit unsigned number of seconds since a reference point). Issue: Investigate these three.

# Type IDs

A "type ID", "property name", "FORM type", or any other IFF identifier is a 32-bit value: the concatenation of four ASCII characters in the range "." (SP, hex 20) through "~" (hex 7E). Spaces (hex 20) should not precede printing characters; trailing spaces are ok. Control characters are forbidden.

typedef CHAR ID[4];

IDs are compared using a simple 32-bit case-dependent equality test.

Data section type IDs (aka FORM types) are restriced IDs. (Cf. Data Sections.) Since they may be stored in filename extensions (Cf. Single Purpose Files) lower case letters and punctuation marks are forbidden. Trailing spaces are ok.

Carefully choose those four characters when you pick a new ID. Make them mnemonic so programmers can look at an interchange format file and figure out what kind of data it contains. The name space makes it possible for developers scattered around the globe to generate ID values with minimal collisions so long as they choose specific names like "MUS4" instead of general ones like "TYPE" and "FILE". EA will "register" new FORM type IDs and format descriptions as they're devised, but collisions will be improbable so there will be no pressure on this "clearinghouse" process. Appendix A has a list of currently defined IDs.

Sometimes it's necessary to make data format changes that aren't backward compatible. Since IDs are used to denote data formats in IFF, new IDs are chosen to denote revised formats. Since programs won't read chunks whose IDs they don't recognize (see Chunks, below), the new IDs keep old programs from stumbling over new data. The conventional way to chose a "revision" ID is to increment the last character if it's a digit or else change the last character to a digit. E.g. first and second revisions of the ID "XY" would be "XY1" and "XY2". Revisions of "CMAP" would be "CMA1" and "CMA2".

# Chunks

Chunks are the building blocks in the IFF structure. The form (in C) is

The fixed header part means "Here's another ckID type chunk, ckSize bytes long."

The ckID identifies the format and purpose of the chunk. As a rule, a program must recognize ckID to interpret ckData. It should skip over all unrecognized chunks. The ckID also serves as a format version number as long as we pick new IDs to identify new formats of ckData (see above).

The following ckIDs are universally reserved to identify chunks with particular IFF meanings: "LIST", "FORM", "PROP", "CAT", and " ". The special ID " " (4 spaces) is a ckID for "filler" chunks, that is, chunks that fill space but have no meaningful contents. The IDs "LIS1" through "LIS9", "FOR1" through "FOR9", and "CAT1" through "CAT9" are reserved for future "version number" variations. All IFF-compatible software must account for these 23 chunk IDs. Appendix A has a list of predefined IDs.

The cksize is a logical block size—how many data bytes are in ckData. If ckData is an odd number of bytes long, a 0 pad byte follows which is <u>not</u> included in cksize. (Cf. Alignment.) A chunk's total physical size is cksize rounded up to an even number plus the size of the header. So the smallest chunk is 8 bytes long with cksize = 0. For the sake of following chunks, programs must respect every chunk's cksize as a virtual end-of-file for reading its ckData even if that data is malformed, e.g. if nested contents are truncated.

We can describe the syntax of a chunk as a regular expression with "#" representing the cksize, i.e. the length of the following {braced} bytes. The "[0]" represents a sometimes needed pad byte. (The regular expressions in this document are collected in Appendix A along with an explanation of notation.)

```
Chunk ::= ID #{ UBYTE* } [0]
```

One chunk output technique is to stream write a chunk header, stream write the chunk contents, then random access back to the header to fill in the size. Another technique is to make a preliminary pass over the data to compute the size, then write it out all at once.

# Strings, String Chunks, and String Properties

In a string of ASCII text, LF denotes a forced line break (paragraph or line terminator). Other control characters are not used. (Cf. Characters.)

The ckID for a chunk that contains a string of plain, unformatted text is "TEXT". As a practical matter, a text string should probably not be longer than 32767 bytes. The standard allows up to  $2^{31}$  - 1 bytes.

When used as a data property (see below), a text string chunk may be 0 to 255 characters long. Such a string is readily converted to a C string or a Pascal STRING [255]. The ckID of a property must be the property name, not "TEXT".

When used as a <u>part</u> of a chunk or data property, restricted C string format is normally used. That means 0 to 255 characters followed by a NUL byte (ASCII value 0).

# **Data Properties**

Data properties specify attributes for following (non-property) chunks. A data property essentially says

"identifier = value", for example "XY = (10, 200)", telling something about following chunks. Properties may only appear inside data sections ("FORM" chunks, cf. Data Sections) and property sections ("PROP" chunks, cf. Group PROP).

The form of a data property is a special case of Chunk. The ckID is a property name as well as a property type. The ckSize should be small since data properties are intended to be accumulated in RAM when reading a file. (256 bytes is a reasonable upper bound.) Syntactically:

Property ::= Chunk

When designing a data object, use properties to describe context information like the size of an image, even if they don't vary in your program. Other programs will need this information.

Think of property settings as assignments to variables in a programming language. Multiple assignments are redundant and local assignments temporarily override global assignments. The order of assignments doesn't matter as long as they precede the affected chunks. (Cf. LISTs, CATs, and Shared Properties.)

Each object type (FORM type) is a local name space for property IDs. Think of a "CMAP" property in a "FORM ILBM" as the qualified ID "ILBM.CMAP". Property IDs specified when an object type is designed (and therefore known to all clients) are called "standard" while specialized ones added later are "nonstandard".

# Links

Issue: A standard mechanism for "links" or "cross references" is very desirable for things like combining images and sounds into animations. Perhaps we'll define "link" chunks within FORMs that refer to other FORMs or to specific chunks within the same and other FORMs. This needs further work. EA IFF 1985 has no standard link mechanism.

For now, it may suffice to read a list of, say, musical instruments, and then just refer to them within a musical score by index number.

# File References

Issue: We may need a standard form for references to other files. A "file ref" would name a directory and a file in the same type of operating system as the ref's originator. Following the reference would expect the file to be on some mounted volume. In a network environment, a file ref could name a server, too.

Issue: What about a means to reference a portion of another file? Would this be a "file ref" plus a reference to a "link" within the target file?

# 4. Data Sections

The first thing we need of a file is to tell if it contains IFF data or not and, if so, does it contain the kind of data we're looking for? So we come to the notion of a "data section".

A "data section" or "data object" or IFF "FORM" is the main point of an IFF file. It is one high level object such as a picture or sound effect; self-contained and self-identifying. It could be a composite object like a musical score with nested musical instrument descriptions.

# **Group FORM**

A data section is a chunk with ckID "FORM" and this arrangement:

```
FORM ::= "FORM" #{ FormType (LocalChunk | FORM | LIST | CAT)* }
FormType ::= ID
LocalChunk ::= Property | Chunk
```

The ID "FORM" is a syntactic keyword like "struct" in C. Think of a "struct ILBM" containing a field "CMAP". If you see "FORM" you'll know to expect a FORM type ID (the structure name, "ILBM" in this example) and a particular contents arrangement or "syntax" (local chunks, FORMs, LISTs, and CATs). (LISTs and CATs are discussed in part 5, below.) A "FORM ILBM", in particular, might contain a local chunk "CMAP", an "ILBM.CMAP" (to use a qualified name).

So the chunk ID "FORM" indicates a data section. It implies that the chunk contains an ID and some number of nested chunks. In reading a FORM, like any other chunk, programs must respect its cksize as a virtual end-of-file for reading its contents, even if they're truncated.

The FormType (or FORM type) is a restricted ID that may not contain lower case letters or punctuation characters. (Cf. Type IDs. Cf. Single Purpose Files.)

The type-specific information in a FORM is composed of its "local chunks": data properties and other chunks. Each FORM type is a local name space for local chunk IDs. So "CMAP" local chunks in other FORM types may be unrelated to "ILBM.CMAP". More than that, each FORM type defines semantic scope. If you know what a FORM ILBM is, you'll know what an ILBM.CMAP is.

Local chunks defined when the FORM type is designed (and therefore known to all clients of this type) are called "standard" while specialized ones added later are "nonstandard".

Among the local chunks, property chunks give settings for various details like text font while the other chunks supply the essential information. This distinction is not clear cut. A property setting cancelled by a later setting of the same property has effect only on data chunks in between. E.g. in the sequence:

```
prop1 = x (propN = value) * prop1 = y
```

where the propNs are not prop1, the setting prop1 = x has no effect.

The following universal chunk IDs are reserved inside any FORM: "LIST", "FORM", "PROP", "CAT ", " ", "LIS1" through "LIS9", "FOR1" through "FOR9", and "CAT1" through "CAT9". (Cf. Chunks. Cf. Group LIST. Cf. Group PROP.) For clarity, these universal chunk names may not be FORM type IDs, either.

Part 5, below, talks about grouping FORMs into LISTs and CATs. They let you group a bunch of FORMs but don't impose any particular meaning or constraints on the grouping. Read on.

# Composite FORMs

A FORM chunk inside a FORM is a full-fledged data section. This means you can build a composite object like a multi-frame animation sequence from available picture FORMs and sound effect FORMs. You can insert additional chunks with information like frame rate and frame count.

Using composite FORMs, you leverage on existing programs that create and edit the component FORMs. Those editors <u>may</u> even look into your composite object to copy out its type of component, although it'll be the rare program that's fancy enough to do that. Such editors are <u>not</u> allowed to replace their component objects within your composite object. That's because the IFF standard lets you specify consistency requirements for the composite FORM such as maintaining a count or a directory of the components. Only programs that are written to uphold the rules of your FORM type should create or modify such FORMs.

Therefore, in designing a program that creates composite objects, you are <u>strongly requested</u> to provide a facility for your users to import and export the nested FORMs. Import and export could move the data through a clipboard or a file.

Here are several existing FORM types and rules for defining new ones.

### FTXT

An FTXT data section contains text with character formatting information like fonts and faces. It has no paragraph or document formatting information like margins and page headers. FORM FTXT is well matched to the text representation in Amiga's Intuition environment. See the supplemental document "FTXT" IFF Formatted Text.

# ILBM

"ILBM" is an InterLeaved BitMap image with color map; a machine-independent format for raster images. FORM ILBM is the standard image file format for the Commodore-Amiga computer and is useful in other environments, too. See the supplemental document "ILBM" IFF Interleaved Bitmap.

# **PICS**

The data chunk inside a "PICS" data section has ID "PICT" and holds a QuickDraw picture. Issue: Allow more than one PICT in a PICS? See <u>Inside Macintosh</u> chapter "QuickDraw" for details on PICTs and how to create and display them on the Macintosh computer.

The only standard property for PICS is "XY", an optional property that indicates the position of the PICT relative to "the big picture". The contents of an XY is a QuickDraw Point.

Note: PICT may be limited to Macintosh use, in which case there'll be another format for structured graphics in other environments.

# Other Macintosh Resource Types

Some other Macintosh resource types could be adopted for use within IFF files; perhaps MWRT, ICN, ICN#, and STR#.

Issue: Consider the candidates and reserve some more IDs.

# **Designing New Data Sections**

Supplemental documents will define additional object types. A supplement needs to specify the object's purpose, its FORM type ID, the IDs and formats of standard local chunks, and rules for generating and interpreting the data. It's a good idea to supply typedefs and an example source program that accesses the new object. See "ILBM" IFF Interleaved Bitmap for a good example.

Anyone can pick a new FORM type ID but should reserve it with Electronic Arts at their earliest convenience. [Issue: EA contact person? Hand this off to another organization?] While decentralized format definitions and extensions are possible in IFF, our preference is to get design consensus by committee, implement a program to read and write it, perhaps tune the format, and then publish the format with example code. Some organization should remain in charge of answering questions and coordinating extensions to the format.

If it becomes necessary to revise the design of some data section, its FORM type ID will serve as a version number (Cf. Type IDs). E.g. a revised "VDEO" data section could be called "VDE1". But try to get by with compatible revisions within the existing FORM type.

In a new FORM type, the rules for primitive data types and word-alignment (Cf. Primitive Data Types) may be overriden for the contents of its local chunks—but not for the chunk structure itself—if your documentation spells out the deviations. If machine-specific type variants are needed, e.g. to store vast numbers of integers in reverse bit order, then outline the conversion algorithm and indicate the variant inside each file, perhaps via different FORM types. Needless to say, variations should be minimized.

In designing a FORM type, encapsulate all the data that other programs will need to interpret your files. E.g. a raster graphics image should specify the image size even if your program always uses  $320 \times 200$  pixels x 3 bitplanes. Receiving programs are then empowered to append or clip the image rectangle, to add or drop bitplanes, etc. This enables a <u>lot</u> more compatibility.

Separate the central data (like musical notes) from more specialized information (like note beams) so simpler programs can extract the central parts during read-in. Leave room for expansion so other programs can squeeze in new kinds of information (like lyrics). And remember to keep the property chunks manageably short—let's say ≤ 256 bytes.

When designing a data object, try to strike a good tradeoff between a super-general format and a highly-specialized one. Fit the details to at least one particular need, for example a raster image might as well store pixels in the current machine's scan order. But add the kind of generality that makes it usable with foreseeable hardware and software. E.g. use a whole byte for each red, green, and blue color value even if this year's computer has only 4-bit video DACs. Think ahead and help other programs so long as the overhead is acceptable. E.g. run compress a raster by scan line rather than as a unit so future programs can swap images by scan line to and from secondary storage.

Try to design a general purpose "least common multiple" format that encompasses the needs of many programs without getting too complicated. Let's coalesce our uses around a few such formats widely separated in the vast design space. Two factors make this flexibility and simplicity practical. First, file storage space is getting very plentiful, so compaction is not a priority. Second, nearly any locally-performed data conversion work during file reading and writing will be cheap compared to the I/O time.

It must be ok to copy a LIST or FORM or CAT intact, e.g. to incorporate it into a composite FORM. So any kind of internal references within a FORM must be relative references. They could be relative to the start of the containing FORM, relative from the referencing chunk, or a sequence number into a collection.

With composite FORMs, you leverage on existing programs that create and edit the components. If you write a program that creates composite objects, <u>please</u> provide a facility for your users to import and export the nested FORMs. The import and export functions may move data through a separate file or a clipboard.

Finally, don't forget to specify all implied rules in detail.

# 5. LISTs, CATs, and Shared Properties

Data often needs to be grouped together like a list of icons. Sometimes a trick like arranging little images into a big raster works, but generally they'll need to be structured as a first class group. The objects "LIST" and "CAT" are IFF-universal mechanisms for this purpose.

Property settings sometimes need to be shared over a list of similar objects. E.g. a list of icons may share one color map. LIST provides a means called "PROP" to do this. One purpose of a LIST is to define the scope of a PROP. A "CAT", on the other hand, is simply a concatenation of objects.

Simpler programs may skip LISTs and PROPs altogether and just handle FORMs and CATs. All "fully-conforming" IFF programs also know about "CAT", "LIST", and "PROP". Any program that reads a FORM inside a LIST <u>must</u> process shared PROPs to correctly interpret that FORM.

# **Group CAT**

A CAT is just an untyped group of data objects.

Structurally, a CAT is a chunk with chunk ID "CAT" containing a "contents type" ID followed by the nested objects. The ckSize of each contained chunk is essentially a relative pointer to the next one.

```
CAT := "CAT " #{ ContentsType (FORM | LIST | CAT)* } \
ContentsType := ID
```

In reading a CAT, like any other chunk, programs must respect it's cksize as a virtual end-of-file for reading the nested objects even if they're malformed or truncated.

The "contents type" following the CAT's cksize indicates what kind of FORMs are inside. So a CAT of ILBMs would store "ILBM" there. It's just a hint. A CAT should have blank contents ID (" ") if it contains more than one kind of FORM.

CAT defines only the <u>format</u> of the group. The group's <u>meaning</u> is open to interpretation. This is like a list in LISP: the structure of cells is predefined but the meaning of the contents as, say, an association list depends on use. If you need a group with an enforced meaning (an "abstract data type" or Smalltalk "subclass"), some consistency constraints, or additional data chunks, use a composite FORM instead (Cf. Composite FORMs).

Since a CAT just means a concatenation of objects, CATs are rarely nested. Programs should really merge CATs rather than nest them.

# **Group LIST**

A LIST defines a group very much like CAT but it also gives a scope for PROPs (see below). And unlike CATs, LISTs should not be merged without understanding their contents.

Structurally, a LIST is a chunk with ckID "LIST" containing a "contents type" ID, optional shared properties, and the nested contents (FORMs, LISTs, and CATs), in that order. The ckSize of each contained chunk is a relative pointer to the next one. A LIST is not an arbitrary linked list—the cells are simply concatenated.

```
LIST := "LIST" #{ ContentsType PROP* (FORM | LIST | CAT)* }
ContentsType ::= ID
```

# **Group PROP**

PROP chunks may appear in LISTs (not in FORMs or CATs). They supply shared properties for the FORMs in that LIST. This ability to elevate some property settings to shared status for a list of forms is useful for both indirection and compaction. E.g. a list of images with the same size and colors can share one "size" property and one "color map" property. Individual FORMs can override the shared settings.

The contents of a PROP is like a FORM with no data chunks:

```
PROP ::= "PROP" #{ FormType Property* }
```

It means, "Here are the shared properties for FORM type <FormType>."

A LIST may have at most one PROP of a FORM type, and all the PROPs must appear before any of the FORMs or nested LISTs and CATs. You can have subsequences of FORMs sharing properties by making each subsequence a LIST.

Scoping: Think of property settings as variable bindings in nested blocks of a programming language. Where in C you could write:

An IFF file could contain:

```
LIST {
  PROP TEXT {
    FONT {TimesRoman}
                                      /* shared setting
                                                                      */
  FORM TEXT (
    FONT {Helvetica}
                                     /* local setting
                                                                      */
    CHRS {Hello }
                                      /* uses font Helvetica
                                                                      */
  FORM TEXT (
    CHRS {there.}
                                      /* uses font TimesRoman
                                                                      */
  }
```

The shared property assignments selectively override the reader's global defaults, but only for FORMs within the group. A FORM's own property assignments selectively override the global and group-supplied values. So when reading an IFF file, keep property settings on a stack. They're designed to be small

enough to hold in main memory.

Shared properties are semantically equivalent to copying those properties into each of the nested FORMs right after their FORM type IDs.

# **Properties for LIST**

Optional "properties for LIST" store the origin of the list's contents in a PROP chunk for the fake FORM type "LIST". They are the properties originating program "OPGM", processor family "OCPU", computer type "OCMP", computer serial number or network address "OSN ", and user name "UNAM". In our imperfect world, these could be called upon to distinguish between unintended variations of a data format or to work around bugs in particular originating/receiving program pairs. Issue: Specify the format of these properties.

A creation date could also be stored in a property but let's ask that file creating, editing, and transporting programs maintain the correct date in the local file system. Programs that move files between machine types are expected to copy across the creation dates.

# 6. Standard File Structure

### File Structure Overview

An IFF file is just a single chunk of type FORM, LIST, or CAT. Therefore an IFF file can be recognized by its first 4 bytes: "FORM", "LIST", or "CAT". Any file contents after the chunk's end are to be ignored.

Since an IFF file can be a group of objects, programs that read/write single objects can communicate to an extent with programs that read/write groups. You're encouraged to write programs that handle all the objects in a LIST or CAT. A graphics editor, for example, could process a list of pictures as a multiple page document, one page at a time.

Programs should enforce IFF's syntactic rules when reading and writing files. This ensures reliable data transfer. The public domain IFF reader/writer subroutine package does this for you. A utility program "IFFCheck" is available that scans an IFF file and checks it for conformance to IFF's syntactic rules. IFFCheck also prints an outline of the chunks in the file, showing the ckID and ckSize of each. This is quite handy when building IFF programs. Example programs are also available to show details of reading and writing IFF files.

A merge program "IFFJoin" will be available that logically appends IFF files into a single CAT group. It "unwraps" each input file that is a CAT so that the combined file isn't nested CATs.

If we need to revise the IFF standard, the three anchoring IDs will be used as "version numbers". That's why IDs "FOR1" through "FOR9", "LIS1" through "LIS9", and "CAT1" through "CAT9" are reserved.

IFF formats are designed for reasonable performance with floppy disks. We achieve considerable simplicity in the formats and programs by relying on the host file system rather than defining universal grouping structures like directories for LIST contents. On huge storage systems, IFF files could be leaf nodes in a file structure like a B-tree. Let's hope the host file system implements that for us!

Thre are two kinds of IFF files: single purpose files and scrap files. They differ in the interpretation of multiple data objects and in the file's external type.

# Single Purpose Files

A single purpose IFF file is for normal "document" and "archive" storage. This is in contrast with "scrap files" (see below) and temporary backing storage (non-interchange files).

The external file type (or filename extension, depending on the host file system) indicates the file's contents. It's generally the FORM type of the data contained, hence the restrictions on FORM type IDs.

Programmers and users may pick an "intended use" type as the filename extension to make it easy to filter for the relevant files in a filename requestor. This is actually a "subclass" or "subtype" that conveniently separates files of the same FORM type that have different uses. Programs cannot demand conformity to its expected subtypes without overly restricting data interchange since they cannot know about the subtypes to be used by future programs that users will want to exchange data with.

Issue: How to generate 3-letter MS-DOS extensions from 4-letter FORM type IDs?

Most single purpose files will be a single FORM (perhaps a composite FORM like a musical score containing nested FORMs like musical instrument descriptions). If it's a LIST or a CAT, programs should skip over unrecognized objects to read the recognized ones or the first recognized one. Then a program that can read a single purpose file can read something out of a "scrap file", too.

# Scrap Files

A "scrap file" is for maximum interconnectivity in getting data between programs; the core of a clipboard function. Scrap files may have type "IFF" or filename extension ".IFF".

A scrap file is typically a CAT containing alternate representations of the same basic information. Include as many alternatives as you can readily generate. This redundancy improves interconnectivity in situations where we can't make all programs read and write super-general formats. [Inside Macintosh chapter "Scrap Manager".] E.g. a graphically-annotated musical score might be supplemented by a stripped down 4-voice melody and by a text (the lyrics).

The originating program should write the alternate representations in order of "preference": most preferred (most comprehensive) type to least preferred (least comprehensive) type. A receiving program should either use the first appearing type that it understands or search for its own "preferred" type.

A scrap file should have at most <u>one</u> alternative of any type. (A LIST of same type objects is ok as one of the alternatives.) But don't count on this when reading; ignore extra sections of a type. Then a program that reads scrap files can read something out of single purpose files.

# Rules for Reader Programs

Here are some notes on building programs that read IFF files. If you use the standard IFF reader module "IFFR.C", many of these rules and details will be automatically handled. (See "Support Software" in Appendix A.) We recommend that you start from the example program "ShowILBM.C". You should also read up on recursive descent parsers. [See, for example, <u>Compiler Construction</u>, <u>An Advanced Course</u>.]

- The standard is very flexible so many programs can exchange data. This implies a program has to scan the file and react to what's actually there in whatever order it appears. An IFF reader program is a parser.
- For interchange to really work, programs must be willing to do some conversion during read-in. If the data isn't exactly what you expect, say, the raster is smaller than those created by your program, then adjust it. Similarly, your program could crop a large picture, add or drop bitplanes, and create/discard a mask plane. The program should give up gracefully on data that it can't convert.
- If it doesn't start with "FORM", "LIST", or "CAT", it's not an IFF-85 file.
- For any chunk you encounter, you must recognize its type ID to understand its contents.
- For any FORM chunk you encounter, you must recognize its FORM type ID to understand the contained "local chunks". Even if you don't recognize the FORM type, you can still scan it for nested FORMs, LISTs, and CATs of interest.
- Don't forget to skip the pad byte after every odd-length chunk.
- Chunk types LIST, FORM, PROP, and CAT are generic groups. They always contain a subtype ID followed by chunks.
- Readers ought to handle a CAT of FORMs in a file. You may treat the FORMs like document pages to sequence through or just use the first FORM.
- Simpler IFF readers completely skip LISTs. "Fully IFF-conforming" readers are those that handle LISTs, even if just to read the first FORM from a file. If you do look into a LIST, you must process shared

properties (in PROP chunks) properly. The idea is to get the correct data or none at all.

 The nicest readers are willing to look into unrecognized FORMs for nested FORM types that they do recognize. For example, a musical score may contain nested instrument descriptions and an animation file may contain still pictures.

Note to programmers: Processing PROP chunks is not simple! You'll need some background in interpreters with stack frames. If this is foreign to you, build programs that read/write only one FORM per file. For the more intrepid programmers, the next paragraph summarizes how to process LISTs and PROPs. See the general IFF reader module "IFFR.C" and the example program "ShowlLBM.C" for details.

Allocate a stack frame for every LIST and FORM you encounter and initialize it by copying the stack frame of the parent LIST or FORM. At the top level, you'll need a stack frame initialized to your program's global defaults. While reading each LIST or FORM, store all encountered properties into the current stack frame. In the example ShowILBM, each stack frame has a place for a bitmap header property ILBM.BMHD and a color map property ILBM.CMAP. When you finally get to the ILBM's BODY chunk, use the property settings accumulated in the current stack frame.

# **Rules for Writer Programs**

Here are some notes on building programs that write IFF files, which is much easier than reading them. If you use the standard IFF writer module "IFFW.C" (see "Support Software" in Appendix A), many of these rules and details will automatically be enforced. See the example program "Raw2ILBM.C".

- An IFF file is a single FORM, LIST, or CAT chunk.
- Any IFF-85 file must start with the 4 characters "FORM", "LIST", or "CAT", followed by a LONG cksize. There should be no data after the chunk end.
- Chunk types LIST, FORM, PROP, and CAT are generic. They always contain a subtype ID followed by chunks. These three IDs are universally reserved, as are "LIS1" through "LIS9", "FOR1" through "FOR9", "CAT1" through "CAT9", and " ".
- Don't forget to write a 0 pad byte after each odd-length chunk.
- Four techniques for writing an IFF group: (1) build the data in a file mapped into virtual memory, (2) build the data in memory blocks and use block I/O, (3) stream write the data piecemeal and (don't forget!) random access back to set the group length count, and (4) make a preliminary pass to compute the length count then stream write the data.
- Do not try to edit a file that you don't know how to create. Programs may look into a file and copy out nested FORMs of types that they recognize, but don't edit and replace the nested FORMs and don't add or remove them. That could make the containing structure inconsistent. You may write a new file containing items you copied (or copied and modified) from another IFF file, but don't copy structural parts you don't understand.
- You must adhere to the syntax descriptions in Appendex A. E.g. PROPs may only appear inside LISTs.

# Appendix A. Reference

# **Type Definitions**

The following C typedefs describe standard IFF structures. Declarations to use in practice will vary with the compiler. For example, 68000 Lattice C produces efficient comparison code if we define ID as an "unsigned long". A macro "MakeID" builds these IDs at compile time.

```
/* Standard IFF types. */
                                 /* 8 bits unsigned */
typedef unsigned char UBYTE;
                                 /* 16 bits signed */
typedef short WORD;
                                /* 16 bits unsigned */
typedef unsigned short UWORD;
                                /* 32 bits signed */
typedef long LONG;
typedef char ID[4];
typedef struct {
  ID
      ckID:
                                /* sizeof(ckData)
                                                     */
  LONG ckSize;
  UBYTE ckData[/* ckSize */];
  } Chunk;
/* ID typedef and builder for 68000 Lattice C. */
typedef LONG ID;
#define MakeID(a,b,c,d) ( (a)<<24 | (b)<<16 | (c)<<8 | (d) )
/* Globally reserved IDs. */
#define FORM MakeID('F','O','R','M')
#define LIST MakeID('L','I','S','T')
#define PROP MakeID('P','R','O','P')
#define CAT MakeID('C','A','T',' ')
#define FILLER MakeID(' ',' ',' ',' ')
```

# **Syntax Definitions**

Here's a collection of the syntax definitions in this document.

```
::= ID #{ UBYTE* } [0]
Chunk
            ::= Chunk
Property
            ::= "FORM" #{ FormType (LocalChunk | FORM | LIST | CAT) * }
FORM
           ::= ID
FormType
LocalChunk ::= Property | Chunk
            ::= "CAT " #{ ContentsType (FORM | LIST | CAT) * }
CAT
ContentsType ::= ID
            ::= "LIST" #{ ContentsType PROP* (FORM | LIST | CAT)* }
LIST
             ::= "PROP" #{ FormType Property* }
PROP
```

In this extended regular expression notation, the token "#" represents a cksize LONG count of the

following {braced} data bytes. Literal items are shown in "quotes", [square bracketed items] are optional, and "\*" means 0 or more instances. A sometimes-needed pad byte is shown as "[0]".

# **Defined Chunk IDs**

This is a table of currently defined chunk IDs. We'll also borrow some Macintosh IDs and data formats.

Group chunk IDs
FORM, LIST, PROP, CAT.
Future revision group chunk IDs
FOR1 ... FOR9, LIS1 ... LIS9, CAT1 ... CAT9.
FORM type IDs

(The above group chunk IDs may not be used for FORM type IDs.)
(Lower case letters and punctuation marks are forbidden in FORM type IDs.)

PLBM, ILBM, ANBM, FTXT, PICS, USCR, GSCR, UVOX, GVOX, SFX, FNTR, FNTV, VDEO, PDEF.

Data chunk IDs
" ", TEXT, PICT.

PROP LIST property IDs

OPGM, OCPU, OCMP, OSN, UNAM.

Formats for sampled sound, musical instrument, and musical score are currently being developed.

# **Support Software**

These public domain C source programs are available for use in building IFF-compatible programs:

IFF.H, IFFR.C, IFFW.C IFF reader and writer package. These modules handle many of

the details of reliably reading and writing IFF files.

IFFCheck.C This handy utility program scans an IFF file, checks that the

contents are well formed, and prints an outline of the chunks.

Packer.H, Packer.C, UnPacker.C Run encoder and decoder used for ILBM files.

ILBM.H, ILBMR.C, ILBMW.C Reader and writer support routines for raster image FORM ILBM.

ILBMR calls IFFR and UnPacker, ILBMW calls IFFW and Packer

ShowILBM.C Example caller of IFFR and ILBMR modules. This

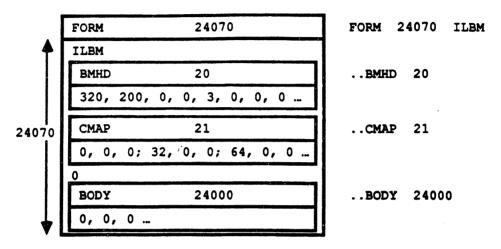
Commodore-Amiga program reads and displays a FORM ILBM.

Raw2ILBM.C Example ILBM writer program. As a demonstration, it reads a raw

raster image file and writes the image as a FORM ILBM file.

# **Example Diagrams**

Here's a box diagram for an example IFF file, a raster image FORM ILBM. This FORM contains a bitmap header property chunk BMHD, a color map property chunk CMAP, and a raster data chunk BODY. This particular raster is 320 x 200 pixels x 3 bit planes uncompressed. The "0" after the CMAP chunk represents a zero pad byte; included since the CMAP chunk has an odd length. The text to the right of the diagram shows the outline that would be printed by the IFFCheck utility program for this particular file.



This second diagram shows a LIST of two FORMs ILBM sharing a common BMHD property and a common CMAP property. Again, the text on the right is an outline a la IFFCheck.

| LIST 48114                  | LIST 48114 ILBM |
|-----------------------------|-----------------|
| ILBM                        |                 |
| PROP 62                     | PROP 62 ILBM    |
| ILBM                        |                 |
| BMHD 20                     | BMHD 20         |
| 320, 200, 0, 0, 3, 0, 0, 0  |                 |
| CMAP 21                     | CMAP 21         |
| 0, 0, 0; 32, 0, 0; 64, 0, 0 |                 |
| 0                           |                 |
| FORM 24012                  | FORM 24012 ILBM |
| ILBM                        |                 |
| BODY 24000                  | BODY 24000      |
| 0, 0, 0                     |                 |
| FORM 24012                  | FORM 24012 ILBM |
| ILBM                        |                 |
| BODY 24000                  | BODY 24000      |
| 0, 0, 0                     |                 |

# Appendix B. Standards Committee

The following people contributed to the design of this IFF standard:

Bob "Kodiak" Burns, Commodore-Amiga R. J. Mical, Commodore-Amiga Jerry Morrison, Electronic Arts Greg Riker, Electronic Arts Steve Shaw, Electronic Arts Barry Walsh, Commodore-Amiga •,•

# "ILBM" IFF Interleaved Bitmap

Date:

November 15, 1985

From:

Jerry Morrison, Electronic Arts

Status:

Released and in use

# 1. Introduction

"EA IFF 85" is Electronic Arts' standard for interchange format files. "ILBM" is the format for a 2 dimensional raster graphics image, specifically an InterLeaved bitplane BitMap image with color map. An ILBM is an IFF "data section" or "FORM type", which can be an IFF file or a part of one. (See the IFF reference.)

An ILBM is an archival representation designed for three uses. First, a standalone image that specifies exactly how to display itself (resolution, size, color map, etc.). Second, an image intended to be merged into a bigger picture which has its own depth, color map, and so on. And third, an empty image with a color map selection or "palette" for a paint program. ILBM is also intended as a building block for composite IFF FORMs like "animation sequence" and "structured graphics". Some uses of ILBM will be to preserve as much information as possible across disparate environments. Other uses will be to store data for a single program or highly cooperative programs while maintaining subtle details. So we're trying to accomplish a lot with this one format.

This memo is the IFF supplement for FORM ILBM. Section 2 defines the purpose and format of property chunks bitmap header "BMHD", color map "CMAP", hotspot "GRAB", destination merge data "DEST", sprite information "SPRT", and Commodore Amiga viewport mode "CAMG". Section 3 defines the standard data chunk "BODY". These are the "standard" chunks. Section 4 defines the nonstandard color range data chunk "CRNG". Additional specialized chunks like texture pattern can be added later. The ILBM syntax is summarized in Appendix A as a regular expression and in Appendix B as a box diagram. Appendix C explains the optional run encoding scheme. Appendix D names the committee responsible for this FORM ILBM standard.

Details of the raster layout are given in part 3, "Standard Data Chunk". Some elements are based on the Commodore Amiga hardware but generalized for use on other computers. An alternative to ILBM would be appropriate for computers with true color data in each pixel.

# Reference:

"EA IFF 85" Standard for Interchange Format Files describes the underlying conventions for all IFF files.

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# 2. Standard Properties

The required property "BMHD" and any optional properties must appear before any "BODY" chunk. (Since an ILBM has only one BODY chunk, any following properties are superfluous.) Any of these properties may be shared over a LIST of FORMs IBLM by putting them in a PROP ILBM. (See the "EA IFF 85" memo.)

### **BMHD**

The required property "BMHD" holds a BitMapHeader as defined in these C declarations and following documentation. It describes the dimensions and encoding of the image, including data necessary to understand the BODY chunk to follow.

```
/* Choice of masking technique. */
typedef UBYTE Masking;
#define mskNone
#define mskHasMask
#define mskHasTransparentColor 2
#define mskLasso
typedef UBYTE Compression; /* Choice of compression algorithm applied to
  the rows of all source and mask planes. "cmpByteRun1" is the byte run
  encoding described in Appendix C. Do not compress across rows! */
                              0
#define cmpNone
                              1
#define cmpByteRun1
typedef struct {
                                                                         */
                               /* raster width & height in pixels
  UWORD w, h;
                                                                         */
                                /* pixel position for this image
  WORD x, y;
                                                                         */
                                /* # source bitplanes
  UBYTE nPlanes;
             masking;
  Masking
  Compression compression;
                                                                         */
                                /* unused; for consistency, put 0 here
  UBYTE pad1;
                                /* transparent "color number" (sort of)
                                                                         */
  UWORD transparentColor;
                                /* pixel aspect, a ratio width : height
                                                                         */
  UBYTE xAspect, yAspect;
                                                                         */
  WORD pageWidth, pageHeight; /* source "page" size in pixels
  } BitMapHeader;
```

Fields are filed in the order shown. The UBYTE fields are byte-packed.

The fields w and h indicate the size of the image rectangle in pixels. Each row of the image is stored in an integral number of 16 bit words. The number of words per row is Ceiling(w/16). The fields x and y indicate the desired position of this image within the destination picture. Some reader programs may ignore x and y. A safe default for writing an ILBM is (x, y) = (0, 0).

The number of source bitplanes in the BODY chunk (see below) is stored in nPlanes. An ILBM with a CMAP but no BODY and nPlanes = 0 is the recommended way to store a color map.

Note: Color numbers are color map index values formed by pixels in the destination bitmap, which may be deeper than nPlanes if a DEST chunk calls for merging the image into a deeper image.

The field masking indicates what kind of masking is to be used for this image. The value mskNone designates an opaque rectangular image. The value mskHasMask means that a mask plane is interleaved with the bitplanes in the BODY chunk (see below). The value mskHasTransparentColor indicates that pixels in the source planes matching transparentColor are to be considered "transparent". (Actually, transparentColor isn't a "color number" since it's matched with numbers formed by the source bitmap

rather than the possibly deeper destination bitmap. Note that having a transparent color implies ignoring one of the color registers. See CMAP, below.) The value mskLasso indicates the reader may construct a mask by lassoing the image as in MacPaint<sup>TM</sup>. To do this, put a 1 pixel border of transparentColor around the image rectangle. Then do a seed fill from this border. Filled pixels are to be transparent.

Issue: Include in an appendix an algorithm for converting a transparent color to a mask plane, and maybe a lasso algorithm.

A code indicating the kind of data compression used is stored in compression. Beware that using data compression makes your data unreadable by programs that don't implement the matching decompression algorithm. So we'll employ as few compression encodings as possible. The run encoding byteRun1 is documented in Appendix C, below.

The field pad1 is a pad byte and must be set to 0 for consistency. This field could get used in the future.

The transparentColor specifies which bit pattern means "transparent". This only applies if masking is mskHasTransparentColor or mskLasso (see above). Otherwise, transparentColor should be 0.

The pixel aspect ratio is stored as a ratio in the two fields xAspect and yAspect. This may be used by programs to compensate for different aspects or to help interpret the fields w, h, x, y, pageWidth, and pageHeight, which are in units of pixels. The fraction xAspect/yAspect represents a pixel's width/height. It's recommended that your programs store proper fractions in BitMapHeaders, but aspect ratios can always be correctly compared with the test

```
xAspect •yDesiredAspect = yAspect •xDesiredAspect
```

Typical values for aspect ratio are width: height = 10:11 (Amiga 320 x 200 display) and 1:1 (Macintosh™).

The size in pixels of the source "page" (any raster device) is stored in pageWidth and pageHeight, e.g. (320, 200) for a low resolution Amiga display. This information might be used to scale an image or to automatically set the display format to suit the image. (The image can be larger than the page.)

# **CMAP**

The optional (but encouraged) property "CMAP" stores color map data as triplets of red, green, and blue intensity values. The n color map entries ("color registers") are stored in the order 0 through n-1, totaling 3n bytes. Thus n is the ckSize/3. Normally, n would equal  $2^{nPlanes}$ .

A CMAP chunk contains a ColorMap array as defined below. (These typedefs assume a C compiler that implements packed arrays of 3-byte elements.)

The color components red, green, and blue represent fractional intensity values in the range 0 through 255 256ths. White is (255, 255, 255) and black is (0, 0, 0). If your machine has less color resolution, use the <u>high order</u> bits. Shift each field right on reading (or left on writing) and assign it to (from) a field in a local packed format like Color4, below. This achieves automatic conversion of images across environments with different color resolutions. On reading an ILBM, use defaults if the color map is absent or has fewer color registers than you need. Ignore any extra color registers.

The example type Color4 represents the format of a color register in working memory of an Amiga computer, which has 4 bit video DACs. (The ": 4" tells the C compiler to pack the field into 4 bits.)

Remember that every chunk must be padded to an even length, so a color map with an odd number of entries would be followed by a 0 byte, not included in the ckSize.

# GRAB

The optional property "GRAB" locates a "handle" or "hotspot" of the image relative to its upper left corner, e.g. when used as a mouse cursor or a "paint brush". A GRAB chunk contains a Point2D.

### DEST

The optional property "DEST" is a way to say how to scatter zero or more source bitplanes into a deeper destination image. Some readers may ignore DEST.

The contents of a DEST chunk is DestMerge structure:

The low order depth number of bits in planePick, planeOnOff, and planeMask correspond one-to-one with destination bitplanes. Bit 0 with bitplane 0, etc. (Any higher order bits should be ignored.) "1" bits in planePick mean "put the next source bitplane into this bitplane", so the number of "1" bits should equal nPlanes. "0" bits mean "put the corresponding bit from planeOnOff into this bitplane". Bits in planeMask gate writing to the destination bitplane: "1" bits mean "write to this bitplane" while "0" bits mean "leave this bitplane alone". The normal case (with no DEST property) is equivalent to planePick = planeMask =  $2^{nPlanes} - 1$ .

Remember that color numbers are formed by pixels in the destination bitmap (depth planes deep) not in the source bitmap (nPlanes planes deep).

## **SPRT**

The presence of an "SPRT" chunk indicates that this image is intended as a sprite. It's up to the reader program to actually make it a sprite, if even possible, and to use or overrule the sprite precedence data inside the SPRT chunk:

```
typedef UWORD SpritePrecedence; /* relative precedence, 0 is the highest */
```

Precedence 0 is the highest, denoting a sprite that is foremost.

Creating a sprite may imply other setup. E.g. a 2 plane Amiga sprite would have transparentColor = 0. Color registers 1, 2, and 3 in the CMAP would be stored into the correct hardware color registers for the hardware sprite number used, while CMAP color register 0 would be ignored.

# CAMG

A "CAMG" chunk is specifically for the Commodore Amiga computer. It stores a LONG "viewport mode". This lets you specify Amiga display modes like "dual playfield" and "hold and modify".

#### 3. Standard Data Chunk

#### Raster Layout

Raster scan proceeds left-to-right (increasing X) across scan lines, then top-to-bottom (increasing Y) down columns of scan lines. The coordinate system is in units of pixels, where (0,0) is the upper left comer.

The raster is typically organized as bitplanes in memory. The corresponding bits from each plane, taken together, make up an index into the color map which gives a color value for that pixel. The first bitplane, plane 0, is the low order bit of these color indexes.

A scan line is made of one "row" from each bitplane. A row is one planes' bits for one scan line, but padded out to a word (2 byte) boundary (not necessarily the first word boundary). Within each row, successive bytes are displayed in order and the most significant bit of each byte is displayed first.

A "mask" is an optional "plane" of data the same size (w, h) as a bitplane. It tells how to "cut out" part of the image when painting it onto another image. "One" bits in the mask mean "copy the corresponding pixel to the destination" while "zero" mask bits mean "leave this destination pixel alone". In other words, "zero" bits designate transparent pixels.

The rows of the different bitplanes and mask are <u>interleaved</u> in the file (see below). This localizes all the information pertinent to each scan line. It makes it much easier to transform the data while reading it to adjust the image size or depth. It also makes it possible to scroll a big image by swapping rows directly from the file without random-accessing to all the bitplanes.

#### BODY

The source raster is stored in a "BODY" chunk. This one chunk holds all bitplanes and the optional mask, interleaved by row.

The BitMapHeader, in a BMHD property chunk, specifies the raster's dimensions w, h, and nPlanes. It also holds the masking field which indicates if there is a mask plane and the compression field which indicates the compression algorithm used. This information is needed to interpret the BODY chunk, so the BMHD chunk must appear first. While reading an ILBM's BODY, a program may convert the image to another size by filling (with transparentColor) or clipping.

The BODY's content is a concatenation of scan lines. Each scan line is a concatenation of one row of data from each plane in order 0 through nPlanes-1 followed by one row from the mask (if masking = hasMask). If the BitMapHeader field compression is cmpNone, all h rows are exactly Ceiling(w/16) words wide. Otherwise, every row is compressed according to the specified algorithm and their stored widths depend on the data compression.

Reader programs that require fewer bitplanes than appear in a particular ILBM file can combine planes or drop the high-order (later) planes. Similarly, they may add bitplanes and/or discard the mask plane.

Do <u>not</u> compress across rows and don't forget to compress the mask just like the bitplanes. Remember to pad any BODY chunk that contains an odd number of bytes.

#### 4. Nonstandard Data Chunk

The following data chunk was defined after various programs began using FORM ILBM so it's a "nonstandard" chunk. That means there's some slight chance of name collisions.

#### **CRNG**

A "CRNG" chunk contains "color register range" information. It's useful for identifying a contiguous range of color registers for color cycling. There can be zero or more CRNG chunks in an ILBM, but all should appear before the BODY chunk.

The fields low and high indicate the range of color registers (color numbers) selected by this CRange.

The field active indicates whether color cycling is on or off. Zero means off.

The field rate determines the speed at which the colors will step when color cycling is on. The units are such that a rate of 60 steps per second is represented as  $2^{14} = 16384$ . Slower rates can be obtained by linear scaling; for 30 steps/second, rate = 8192; for 1 step/second, rate = 16384/60 = 273.

# Appendix A. ILBM Regular Expression

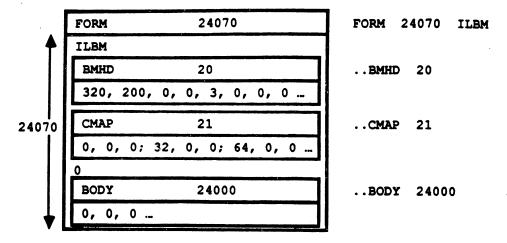
Here's a regular expression summary of the FORM ILBM syntax. This could be an IFF file or a part of one.

The token "#" represents a cksize LONG count of the following {braced} data bytes. E.g. a BMHD's "#" should equal sizeof (BitMapHeader). Literal strings are shown in "quotes", [square bracket items] are optional, and "\*" means 0 or more repetitions. A sometimes-needed pad byte is shown as "[0]".

The property chunks (BMHD, CMAP, GRAB, DEST, SPRT, and CAMG) and any CRNG data chunks may actually be in any order but all must appear before the BODY chunk since ILBM readers usually stop as soon as they read the BODY. If any of the 6 property chunks are missing, default values are "inherited" from any shared properties (if the ILBM appears inside an IFF LIST with PROPs) or from the reader program's defaults. If any property appears more than once, the last occurrence before the BODY is the one that counts since that's the one that modifies the BODY.

# Appendix B. ILBM Box Diagram

Here's a box diagram for a simple example: an uncompressed image  $320 \times 200$  pixels  $\times 3$  bitplanes. The text to the right of the diagram shows the outline that would be printed by the IFFCheck utility program for this particular file.



The "0" after the CMAP chunk is a pad byte.

# Appendix C. ByteRun1 Run Encoding

The run encoding scheme byteRun1 is best described by psuedo code for the decoder Unpacker (called UnPackBits in the Macintosh™ toolbox):

```
UnPacker:

LOOP until produced the desired number of bytes

Read the next source byte into n

SELECT n FROM

[0..127] => copy the next n+1 bytes literally

[-1..-127] => replicate the next byte -n+1 times

-128 => noop

ENDCASE;
ENDLOOP;
```

In the inverse routine Packer, it's best to encode a 2 byte repeat run as a replicate run except when preceded and followed by a literal run, in which case it's best to merge the three into one literal run. Always encode 3 byte repeats as replicate runs.

Remember that each row of each scan line of a raster is separately packed.

# **Appendix D. Standards Committee**

The following people contributed to the design of this FORM ILBM standard:

Bob "Kodlak" Burns, Commodore-Amiga R. J. Mical, Commodore-Amiga Jerry Morrison, Electronic Arts Greg Riker, Electronic Arts Steve Shaw, Electronic Arts Dan Silva, Electronic Arts Barry Walsh, Commodore-Amiga

# "FTXT" IFF Formatted Text

Date:

November 15, 1985

From:

Steve Shaw and Jerry Morrison, Electronic Arts and Bob "Kodiak" Burns, Commodore-Amiga

Status:

Draft 2.6

DRAFT

DRAFT

DRAFT

DRAFT

DRAFT

#### 1. Introduction

This memo is the IFF supplement for FORM FTXT. An FTXT is an IFF "data section" or "FORM type"—which can be an IFF file or a part of one—containing a stream of text plus optional formatting information."EA IFF 85" is Electronic Arts' standard for interchange format files. (See the IFF reference.)

An FTXT is an archival and interchange representation designed for three uses. The simplest use is for a "console device" or "glass teletype" (the minimal 2-D text layout means): a stream of "graphic" ("printable") characters plus positioning characters "space" ("SP") and line terminator ("LF"). This is not intended for cursor movements on a screen although it does not conflict with standard cursor-moving characters. The second use is text that has explicit formatting information (or "looks") such as font family and size, typeface, etc. The third use is as the lowest layer of a structured document that also has "inherited" styles to implicitly control character looks. For that use, FORMs FTXT would be embedded within a future document FORM type. The beauty of FTXT is that these three uses are interchangeable, that is, a program written for one purpose can read and write the others' files. So a word processor does not have to write a separate plain text file to communicate with other programs.

Text is stored in one or more "CHRS" chunks inside an FTXT. Each CHRS contains a stream of 8-bit text compatible with ISO and ANSI data interchange standards. FTXT uses just the central character set from the ISO/ANSI standards. (These two standards are henceforth called "ISO/ANSI" as in "see the ISO/ANSI reference".)

Since it's possible to extract just the text portions from future document FORM types, programs can exchange data without having to save both plain text and formatted text representations.

Character looks are stored as embedded control sequences within CHRS chunks. This document specifies which class of control sequences to use: the CSI group. This document does not yet specify their meanings, e.g. which one means "turn on Italic face". Consult ISO/ANSI.

Section 2 defines the chunk types character stream "CHRS" and font specifier "FONS". These are the "standard" chunks. Specialized chunks for private or future needs can be added later. Section 3 outlines an FTXT reader program that strips a document down to plain unformatted text. Appendix A is a code table for the 8-bit ISO/ANSI character set used here. Appendix B is an example FTXT shown as a box diagram. Appendix C is a racetrack diagram of the syntax of ISO/ANSI control sequences.

#### Reference:

Amiga™ is a trademark of Commodore-Amiga, Inc.

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IFF: "EA IFF 85" Standard for Interchange Format Files describes the underlying conventions for all IFF files.

ISO/ANSI: <u>ISO/DIS</u> 6429.2 and <u>ANSI</u> X3.64-1979. International Organization for Standardization (ISO) and American National Standards Institute (ANSI) data-interchange standards. The relevant parts of these two standards documents are identical. ISO standard 2022 is also relevant.

# 2. Standard Data and Property Chunks

The main contents of a FORM FTXT is in its character stream "CHRS" chunks. Formatting property chunks may also appear. The only formatting property yet defined is "FONS", a font specifier. A FORM FTXT with no CHRS represents an empty text stream. A FORM FTXT may contain nested IFF FORMs, LISTs, or CATs, although a "stripping" reader (see section 3) will ignore them.

#### **Character Set**

FORM FTXT uses the core of the 8-bit character set defined by the ISO/ANSI standards cited at the start of this document. (See Appendix A for a character code table.) This character set is divided into two "graphic" groups plus two "control" groups. Eight of the control characters begin ISO/ANSI standard control sequences. (See "Control Sequences", below.) Most control sequences and control characters are reserved for future use and for compatibility with ISO/ANSI. Current reader programs should skip them.

- C0 is the group of control characters in the range NUL (hex 0) through hex 1F. Of these, only LF (hex 0A) and ESC (hex 1B) are significant. ESC begins a control sequence. LF is the line terminator, meaning "go to the first horizontal position of the next line". All other C0 characters are not used. In particular, CR (hex 0D) is not recognized as a line terminator.
- G0 is the group of graphic characters in the range hex 20 through hex 7F. SP (hex 20) is the space character. DEL (hex 7F) is the delete character which is not used. The rest are the standard ASCII printable characters "!" (hex 21) through "~" (hex 7E).
- C1 is the group of extended control characters in the range hex 80 through hex 9F. Some of these
  begin control sequences. The control sequence starting with CSI (hex 9B) is used for FTXT
  formatting. All other control sequences and C1 control characters are unused.
- G1 is the group of extended graphic characters in the range NBSP (hex A0) through "y" (hex FF). It is one of the alternate graphic groups proposed for ISO/ANSI standardization.

#### **Control Sequences**

Eight of the control characters begin ISO/ANSI standard "control sequences" (or "escape sequences"). These sequences are described below and diagrammed in Appendix C.

```
G0 ::= (SP through DEL)
G1 ::= (NBSP through "Y")

ESC-Seq ::= ESC (SP through "/")* ("0" through "~")
ShiftToG2 ::= SS2 G0
ShiftToG3 ::= SS3 G0

CSI-Seq ::= CSI (SP through "?")* ("0" through "~")
DCS-Seq ::= (DCS | OSC | PM | APC) (SP through "~" | G1)* ST
```

"ESC-Seq" is the control sequence ESC (hex 1B), followed by zero or more characters in the range SP through "/" (hex 20 through hex 2F), followed by a character in the range "0" through "~" (hex 30 through hex 7E). These sequences are reserved for future use and should be skipped by current FTXT reader programs.

SS2 (hex 8E) and SS3 (hex 8F) shift the single following G0 character into yet-to-be-defined graphic sets G2 and G3, respectively. These sequences should not be used until the character sets G2 and G3 are standardized. A reader may simply skip the SS2 or SS3 (taking the following character as a corresponding G0 character) or replace the two-character sequence with a character like "?" to mean "absent".

FTXT uses "CSI-Seq" control sequences to store character formatting (font selection by number, type face, and text size) and perhaps layout information (position and rotation). "CSI-Seq" control sequences

start with CSI (the "control sequence introducer", hex 9B). Syntactically, the sequence includes zero or more characters in the range SP through "?" (hex 20 through hex 3F) and a concluding character in the range "@" through "~" (hex 40 through hex 7E). These sequences may be skipped by a minimal FTXT reader, i.e. one that ignores formatting information.

Note: A future FTXT standardization document will explain the uses of CSI-Seq sequences for setting character face (light weight vs. medium vs. bold, italic vs. upright, height, pitch, position, and rotation). For now, consult the ISO/ANSI references.

"DCS-Seq" is the control sequences starting with DCS (hex 90), OSC (hex 9D), PM (hex 9E), or APC (hex 9F), followed by zero or more characters each of which is in the range SP through "~" (hex 20 through hex 7E) or else a G1 character, and terminated by an ST (hex 9C). These sequences are reserved for future use and should be skipped by current FTXT reader programs.

#### **Data Chunk CHRS**

A CHRS chunk contains a sequence of 8-bit characters abiding by the ISO/ANSI standards cited at the start of this document. This includes the character set and control sequences as described above and summarized in Appendicies A and C.

A FORM FTXT may contain any number of CHRS chunks. Taken together, they represent a single stream of textual information. That is, the contents of CHRS chunks are effectively concatenated except that (1) each control sequence must be completely within a single CHRS chunk, and (2) any formatting property chunks appearing between two CHRS chunks affects the formatting of the latter chunk's text. Any formatting settings set by control sequences inside a CHRS carry over to the next CHRS in the same FORM FTXT. All formatting properties stop at the end of the FORM since IFF specifies that adjacent FORMs are independent of each other (although not independent of any properties inherited from an enclosing LIST or FORM).

#### **Property Chunk FONS**

The optional property "FONS" holds a FontSpecifier as defined in the C declaration below. It assignes a font to a numbered "font register" so it can be referenced by number within subsequent CHRS chunks. (This function is not provided within the ISO and ANSI standards.) The font specifier gives both a name and a description for the font so the recipient program can do font substitution.

By default, CHRS text uses font 1 until it selects another font. A minimal text reader always uses font 1. If font 1 hasn't been specified, the reader may use the local system font as font 1.

```
typedef struct {
  UBYTE id:
                 /* 0 through 9 is a font id number referenced by an SGR
                 control sequence selective parameter of 10 through 19.
                 Other values are reserved for future standardization.
                                                                         */
  UBYTE pad1;
                 /* reserved for future use; store 0 here
                                                                         */
  UBYTE proportional; /* proportional font? 0 = unknown, 1 = no, 2 = yes */
  UBYTE serif;
                      /* serif font? 0 = unknown, 1 = no, 2 = yes
                                                                         */
  char name[]; /* A NUL-terminated string naming the preferred font.
                                                                         */
  } FontSpecifier;
```

Fields are filed in the order shown. The UBYTE fields are byte-packed (2 per 16-bit word). The field pad1 is reserved for future standardization. Programs should store 0 there for now.

The field proportional indicates if the desired font is proportional width as opposed to fixed width. The

field serif indicates if the desired font is serif as opposed to sans serif. [Issue: Discuss font substitution!]

### **Future Properties**

New optional property chunks may be defined in the future to store additional formatting information. They will be used to represent formatting not encoded in standard ISO/ANSI control sequences and for "inherited" formatting in structured documents. Text orientation might be one example.

# **Positioning Units**

Unless otherwise specified, position and size units used in FTXT formatting properties and control sequences are in decipoints (720 decipoints/inch). This is ANSI/ISO Positioning Unit Mode (PUM) 2. While a metric standard might be nice, decipoints allow the existing U.S.A. typographic units to be encoded easily, e.g. "12 points" is "120 decipoints".

## 3. FTXT Stripper

An FTXT reader program can read the text and ignore all formatting and structural information in a document FORM that uses FORMs FTXT for the leaf nodes. This amounts to stripping a document down to a stream of plain text. It would do this by skipping over all chunks except FTXT.CHRS (CHRS chunks found inside a FORM FTXT) and within the FTXT.CHRS chunks skipping all control characters and control sequences. (Appendix C diagrams this text scanner.) It may also read FTXT.FONS chunks to find a description for font 1.

Here's a Pascal-ish program for an FTXT stripper. Given a FORM (a document of some kind), it scans for all FTXT.CHRS chunks. This would likely be applied to the first FORM in an IFF file.

```
PROCEDURE ReadFORM4CHRS();
                                {Read an IFF FORM for FTXT.CHRS chunks.}
   BEGIN
   IF the FORM's subtype = "FTXT"
     THEN ReadFTXT4CHRS()
     ELSE WHILE something left to read in the FORM DO BEGIN
          read the next chunk header:
          CASE the chunk's ID OF
             "LIST", "CAT ": ReadCAT4CHRS();
             "FORM": ReadFORM4CHRS();
             OTHERWISE skip the chunk's body;
             END
          END
  END:
{Read a LIST or CAT for all FTXT.CHRS chunks.}
PROCEDURE ReadCAT4CHRS();
  BEGIN
  WHILE something left to read in the LIST or CAT DO BEGIN
     read the next chunk header;
     CASE the chunk's ID OF
       "LIST", "CAT ": ReadCAT4CHRS();
       "FORM": ReadFORM4CHRS();
       "PROP": IF we're reading a LIST AND the PROP's subtype = "FTXT"
               THEN read the PROP for "FONS" chunks;
       OTHERWISE error--malformed IFF file;
       END
     END
  END;
PROCEDURE ReadFTXT4CHRS();
                            {Read a FORM FTXT for CHRS chunks.}
  BEGIN
  WHILE something left to read in the FORM FTXT DO BEGIN
     read the next chunk header;
     CASE the chunk's ID OF
       "CHRS": ReadCHRS():
       "FONS": BEGIN
          read the chunk's contents into a FontSpecifier variable;
          IF the font specifier's id = 1 THEN use this font:
       OTHERWISE skip the chunk's body;
       END
    END
  END:
```

```
{Read an FTXT.CHRS. Skip all control sequences and unused control chars.}
PROCEDURE ReadCHRS();
  BEGIN
  WHILE something left to read in the CHRS chunk DO
     CASE read the next character OF
       LF: start a new output line;
       ESC: SkipControl([' '..'/'], ['0'..'~']);
       IN [' '..'~'], IN [NBSP..'Y']: output the character;
                     {Just handle the following GO character directly.
       SS2, SS3: ;
                      ignoring the shift to G2 or G3.}
       CSI: SkipControl([' '..'?'], ['@'..'~']);
       DCS, OSC, PM, APC: SkipControl([' '..'~'] + [NBSP..'\pu'], [ST]);
       END
  END:
(Skip a control sequence of the format (rSet)* (tSet), i.e. any number of
  characters in the set rSet followed by a character in the set tSet.}
PROCEDURE SkipControl(rSet, tSet);
  VAR c: CHAR;
  BEGIN
  REPEAT c := read the next character
    UNTIL c NOT IN rSet;
  IF c NOT IN tSet
     THEN put character c back into the input stream;
  END
```

The following program is an optimized version of the above routines ReadFORM4CHRS and ReadCAT4CHRS for the case where you're ignoring fonts as well as formatting. It takes advantage of certain facts of the IFF format to read a document FORM and its nested FORMs, LISTs, and CATs without a stack. In other words, it's a hack that ignores all fonts and faces to cheaply get to the plain text of the document.

```
(Cheap scan of an IFF FORM for FTXT.CHRS chunks.)
PROCEDURE ScanFORM4CHRS();
  BEGIN
  IF the document FORM's subtype = "FTXT"
     THEN ReadFTXT4CHRS()
     ELSE WHILE something left to read in the FORM DO BEGIN
          read the next chunk header;
          IF it's a group chunk (LIST, FORM, PROP, or CAT)
             THEN read its subtype ID;
          CASE the chunk's ID OF
             "LIST", "CAT ":; {NOTE: See explanation below.*}
             "FORM": IF this FORM's subtype = "FTXT" THEN ReadFTXT4CHRS()
                                   {NOTE: See explanation below.*}
             OTHERWISE skip the chunk's body;
             END
          END
   END;
```

\*Note: This implementation is subtle. After reading a group header other than FORM FTXT it just continues reading. This amounts to reading all the chunks inside that group as if they weren't nested in a group.

# Appendix A: Character Code Table

This table corresponds to the ISO/DIS 6429.2 and ANSI X3.64-1979 8-bit character set standards. Only the core character set of those standards is used in FTXT.

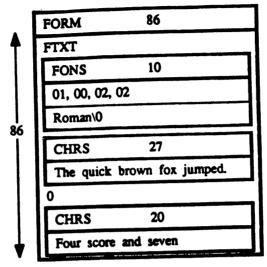
Two G1 characters aren't defined in the standards and are shown as dark gray entries in this table. Light gray shading denotes control characters. (DEL is a control character although it belongs to the graphic group G0.) The following five rare G1 characters are left blank in the table below due to limitations of available fonts: hex A8, D0, DE, F0, and FE.

ISO/DIS 6429.2 and ANSI X3.64-1979 Character Code LSN Most Significant Nibble (hex digit) 0 2 3 6 8 D E F 1 SP P DCS NBSP à 0 NUL 0 0 p Á 1 1 A Q Ñ á ñ ! a q 2 \*\* 2 2 Â Ò ¢ â В R b r Ò 3 Ā Ó 3 3 C S £ ã 6 C S X T 4 \$ 4 D d t ĝ ä ô Å 5 ٠, 5 E U e u ¥ μ å ō Æ 6 Ö £ 6 F V f v I ö æ 7 7 G W 5 w <del>く</del> を a Ç 8 8 H X h X Ø ( è Ø í É Ù 9 9 Y i 0 I У é ù ) Ê Ú A LF Z j ê : J ú Z Ë Û В ESC CSI + K k { **«** \* ë û C Ü < L ī ST 1/4 ì ü , Í D CR Ý M ] osc SHY 1/2 í m } ý E N SS2 PM ₿ 3/4 Î > n î F ? DEL 0 SS3 APC ï Control Graphic Control group Graphic group group G<sub>0</sub> group G1 CO C1

<sup>&</sup>quot;NBSP" is a "non-breaking space"
"SHY" is a "soft hyphen"

# Appendix B. FTXT Example

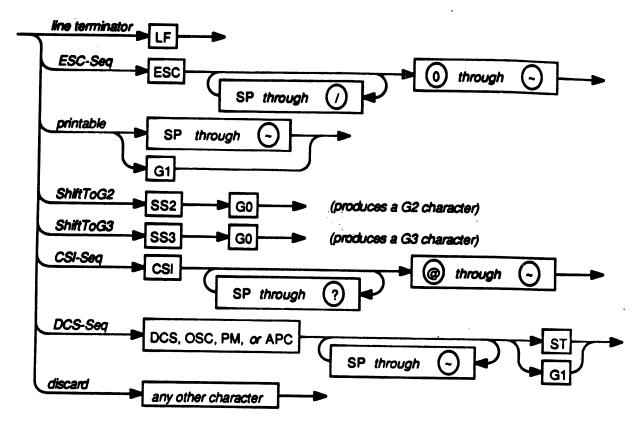
Here's a box diagram for a simple example: "The quick brown fox jumped. Four score and seven", written in a proportional serif font named "Roman".



The "0" after the first CHRS chunk is a pad byte.

# Appendix C. ISO/ANSI Control Sequences

This is a racetrack diagram of the ISO/ANSI characters and control sequences as used in FTXT CHRS chunks.



Of the various control sequences, only CSI-Seq is used for FTXT character formatting information. The others are reserved for future use and for compatibility with ISO/ANSI standards. Certain character sequences are syntactically malformed, e.g. CSI followed by a C0, C1, or G1 character. Writer programs should not generate reserved or malformed sequences and reader programs should skip them.

Consult the ISO/ANSI standards for the meaning of the CSI-Seq control sequences.

The two character set shifts SS2 and SS3 may be used when the graphic character groups G2 and G3 become standardized.

for future standardization.\*/

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```
/* All chunks start with a type ID and a count of the data bytes that
follow--the chunk's "logical size" or "data size". If that number is odd,
a 0 pad byte is written, too. */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /* Pass ckSize = szNotYetKnown to the writer to mean "compute the size".*/ \#define szNotYetKnown 0x8000001L
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /* The Grouping chunks (LIST, FORM, PROP, & CAI) contain concatenations of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (WordAlign(dataSize) + sizeof(Chunkdeader))
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              * ChundPSize computes the total "physical size" of a padded chunk from * its "data size" or "logical size". */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             * chunks after a subtype ID that identifies the content chunks.
* "FCORM type XCCK", "LIST of FCRM type XCCK", "PROPerties associated
* with FCRM type XCCK", or "conCATenation of XCCK".*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /* this ckSize includes "grpSubID".*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ID grpSubID;
UBYIE grpData[ 1 /*REALLY: ckSize-sizeof(grpSubID) */ ];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /* Need to know whether a value is odd so can word-allgn.*/
#define IS_ODD(a) ((a) & 1)
/* Pseudo-ID used internally by chunk reader and writer.*/
#define NUIL_CHUNK OL /* No current chunk.*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /* ALL CHUNKS MIST BE PADDED TO EVEN NUMBER OF BYTES.
                                                                                                           /* ----- Chunk -----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /* This macro rounds up to an even number. */
#define WordAlign(size) ((size+1)6"1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                    UBYTE ckData[ 1 /*REALLY: ckSize*/];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            #define ChunkPSize (dataSize)
                              #define NULL_CHUNK OL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LONG ch&lze;
ID grpSubID;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ScoupHeader;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            typedef struct {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ) GroupChunk
                                                                                                                                                                                                                                                                                                                          } ChunkHeader
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  typedef struct {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ckS1ze
                                                                                                                                                                                                                                                                          ID ckID;
LONG ckSize;
                                                                                                                                                                                                                                                                                                                                                                                                                            LONG clestre;
                                                                                                                                                                                                                                                   typedef struct {
                                                                                                                                                                                                                                                                                                                                                                          typedef struct {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            &ID;
                                                                                                                                                                                                                                                                                                                                                                                                      g
G
G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Churk;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LONG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               •
```

```
/* Close a group read context, updating its parent context.

* After calling this, the old context may be deallocated and the parent

* context can be accessed again. It's okey to call this particular procedure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              If the ckID is LIST, FORM, CAT, or PROP, this automatically reads the subtype ID into context->subtype.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   * This always returns IFF_CKAY. */
extern IFFP CloseRGroup(/* GroupContext * */);
/* old */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /* parent,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  or we hit end-of-file.
                    LONG bytesSoFar;
                                                                             GroupContext;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     means we need to go back and set the size (writer only). See also Pseudo-IDs, above: ^4/
                                                                                                                                   over padding. They're also careful not to read past any containing context.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     The overall scheme for the low level chunk reader is to open a "group read context" with OpenRIFF or OpenRGroup, read the chunks with GetChunkHdr (and its kin) and IFFReadBytes, and close the context with CloseRGroup.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Either initialize each such field to a global default or keep a boolean indicating if you've read a property chunk into that field.

Your getList and getForm procs should allocate a new "frame" and copy the parent frame's contents. The getProp procedure should store into the frame allocated by getList for the containing LIST. */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Client's context for reading an IFF file or a group.

Client should actually make this the first component of a larger struct
(it's personal stack "frame") that has a field to store each "interesting"
                                                                                                                                                                                                                                                                                                                                                                                                                                                  All of these routines may return DOS_ERROR. In that case, ask DOS for the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              struct _GroupContext *parent; /* Containing group; NULL => whole file. */
ClientFrame *clientFrame; /* Reader data & client's context state. */
EPTR file; /* Byte-stream file handle. */
LONG position; /* The context's logical file position. */
LONG bound; /* File-absolute context bound
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /* Current chunk header. ckHdr.ckSize = szNotYetKnown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 The overall scheme for reading an IFF file is to use ReadIFF, ReadIList, and ReadICat to scan the file. See those procedures, ClientProc (below),
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Client passes ptrs to procedures of this type to ReadIFF which call them back to handle LISTs, FORMs, CATs, and PROPs.
                                                                                     These routines handle lots of details like error checking and skipping
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Use the GroupContext ptr when calling reader routines like GetChunkHdr.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         * Look inside the GroupContext ptr for your ClientFrame ptr. You'll * want to type cast it into a ptr to your containing struct to get your * private contextual data (stacked property settings). See below. */typedef IFFP ClientProc(/* struct _GroupContext * */);
/****** Routines to support a stream-oriented IFF file reader *****
                                                                                                                                                                                                                                                                      Client should check IFFF error codes. Don't press on after an error! These routines try to have no side effects in the error case, except
                                                                                                                                                                                                                    These routines ASSUME they're the only ones reading from the file.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           typedef struct _ClientFrams {
    ClientProc *getList, *getProp, *getForm, *getCat;
/* client's own data follows; place to stack property settings */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Group's subtype ID when reading. */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               or szNotYetKnown (writer only). */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* Our context for reading a group chunk. */
typedef struct _GroupContext {
                                                                                                                                                                                                                                                                                                                                                                    partial I/O is sometimes unavoidable.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              and the skeleton IFF reader. */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 property encountered
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           specific error code
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Chundileader ckddr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ID subtype;
```

```
/* # bytes read/written of current chunk's data. */
```

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Computes the number of bytes not yet read from the current chunk, given ((gc)->ckHdr.ckSize - (gc)->bytasSoFar) 

# /\*\*\*\* Low Level IFF Chunk Reader \*\*\*\*\*/

/\* Given an open file, open a read context spanning the whole file.

† This is normally only called by ReadIFF.

† This sets new->clientFrame = clientFrame.

\* ASSUME context allocated by caller but not initialized

\* ASSUME caller doesn't deallocate the context before calling CloseRGroup. \* NOT\_IFF ERROR if the file is too short for even a chunk header. \*/ extern IFFP OpenRIFF (/\* BPTR, GroupContext \*, ClientFrame \* \*/);

clientFrame \*/ /\* file, new,

Open the remainder of the current chunk as a group read context.

\* This will be called just after the group's subtype ID has been read \* (automatically by GetChunkHdr for LIST, FORM, PROP, and CAI) so the

remainder is a sequence of chunks.

This sets new->clientFrame = parent->clientFrame. The caller should repoint it at a new clientframe if opening a LIST context so it'll have a "stack frame" to store PROPs for the LIST. (It's usually convenient to also

allocate a new Frame when you encounter FORM of the right type.)

ASSUME new context allocated by caller but not initialized

ASSUME caller doesn't deallocate the context or access the parent context before calling CloseRGroup.

BAD\_IFF ERROR if context end is odd or extends past parent. \*/ extern IFFP OpenRGroup(/\* GroupContext \*, GroupContext \* \*/);

\* after an error has occurred reading the group.

Skip any remaining bytes of the previous chunk and any padding, then read the next chunk header into context.cdddr.

Caller should dispatch on ckiD (and subtype) to an appropriate handler.

RETURNS context.cdddr.ckID (the ID of the new chunk header); END\_MARK if there are no more chunks in this context; or NOT\_IFF if the top level file chunk isn't a FORM, LIST, or CAT; or BAD\_IFF if malformed chunk, e.g. ckSize is negative or too big for containing context, ckID isn't positive,

See also GetfChunkdidr, GetflChunkdidr, and GetfChunkdidr, below.\*/

```
GetChunkHdr (/* GroupContext * */);
                    context */
                      context. ckfldr.ckID
     extern ID
```

/\* Read nBytes number of data bytes of current chunk. (Use OpenGroup, etc. \* instead to read the contents of a group chunk.) You can call this several

\* times to read the data piecemeal.
\* CLIENT\_ERROR if nBytes < 0. SHORT\_CHUNK if nBytes > ChundWoreBytes (context)

\* which could be due to a client bug or a chunk that's shorter than it \* ought to be (bad form). (on either CLIENT\_ERROR or SHORT\_CHUNK, \* IFFReadBytes won't read any bytes.) \*/ extern IFFP IFFReadBytes(/\* GroupContext \*, BYIE \*, LONC \*/);
/\* context, buffer, nBytes \*/

/\*\*\*\* IFF File Reader \*\*\*\*/

/\* This is a noop ClientProc that you can use for a getList, getForm, getProp, a or getCat procedure that just skips the group. A simple reader might just \* implement getForm, store &ReadICat in the getCat field of clientFrame, and \* use &SkipGroup for the getList and getProp procs.\*/
extern IFFP SkipGroup(/\* GroupContext \* \*/);

/\* IFF file reader

Given an open file, allocate a group context and use it to read the FCRM, LIST, or CAI and it's contents. The idea is to parse the file's contents, and for each FCRM, LIST, CAI, or PROP encountered, call the getForm,

getList, getCat, or getProp procedure in clientFrame, passing the GroupContext ptr.

This is achieved with the aid of ReadIList (which your getList should call) and ReadICat (which your getCat should call, if you don't just use GReadICat for your getCat). If you want to handle FORMs, LISTs, and CATs nested within FORMs, the getForm procedure must dispatch to getForm,

getList, and getCat (it can use CetFiChunkHdr to make this easy).

Normal return is IFF\_OKAY (if whole file scanned) or IFF\_DONE (if a client

getForm, getCat, and getProp procedures. \*/
ClientFrame \* \*/);
clientFrame \*/ /\* file, clientFrame \* proc said "done" first). \* See the skeletal getList, extern IFFP ReadIFF(/\* BPTR,

/\* IFF LIST reader

\* Your "gatList" procedure should allocate a ClientFrame, copy the parent's \* ClientFrame, and then call this procedure to do all the work.

or IFF\_DONE (if a client \* Normal return is IFF\_OKAY (if whole LIST scanned)
\* proc said "done" first).

\* BAD\_IFF ERROR if a PROP appears after a non-PROP. \*/ extern IFFP ReadIList(/\* GroupContext \*, ClientFrams \* \*/); /\* parent, clientFrams \*/

/\* IFF CAT reader

\* Most clients can simply use this to read their CAIs. If you must do extra \* setup work, put a ptr to your getCat procedure in the clientFrame, and \* have that procedure call ReadICat to do the detail work.

Normal return is IFF\_OKAY (if whole CAT scanned) or IFF\_DONE (if a client

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the CAT. \*/ extern IFFP ReadICat(/\* GroupContext \* \*/);
/\* parent \*/ \* BAD\_IFF ERROR 1f a PROP appears in \* proc said "done" first)

/\* Call GetfChunkHdr Instead of CetChunkHdr to read each chunk inside a FCRM \* It just calls GetChunkHdr and returns BAD\_IFF if it gets a PROP chunk. xtern ID GetFChunkHdr(/\* GroupContext \* \*/); extern ID

/\* GetFlChundddr is like GetFChundddr, but it automatically dispatches to the context context.ckHdr.ckID

\* getForm, getList, and getCat procedure (and returns the result) if it \* encounters a FORM, LIST, or CAI. \*/

GetF1ChunkHdr (/\* GroupContext \* \*/); context context.ckHdr.ckID extern ID

\* It just calls GetChunkHdr and returns BAD\_IFF if it gets a group chunk. \*/ xtern ID GetPChunkHdr (/\* GroupContext \* \*/); /\* Call GetPChunididr Instead of CetChunididr to read each chunk Inside a PROP context \*/

context.ckHdr.ckID

/\* ------ IFF Writer ------

/\*\*\*\*\*\* Routines to support a stream-oriented IFF file writer \*\*\*\*\*\*

These routines will random access back to set a chunk size value when the caller doesn't know it ahead of time. They'll also do things automatically

like padding and error checking.

These routines ASSUME they're the only ones writing to the file. Client should check IEFP error codes. Don't press on after an error! These routines try to have no side effects in the error case, except that partial I/O is sometimes unavoidable.

All of these routines may return DOS\_ERROR. In that case, ask DOS for the specific error code The overall scheme is to open an output GroupContext via OpenNIFF or OpenNG-oup, call either PutCk or {PutCldidr {IFFWiteBytes}\* PutCldid} for each chunk, then use CloseMG-oup to close the GroupContext.

To write a group (LIST, FORM, PROP, or CAI), call StartWA-oup, write out its chunks, then call EndWA-oup. StartWA-oup automatically writes the group header and opens a nested context for writing the contents. EndWA-oup closes the nested context and completes the group chunk. \*/

The "limit" arg imposes a fence or upper limit on the logical file position for writing data in this context. Pass in szNotYetKnown to be Given a file open for output, open a write context.

bounded only by disk capacity.

\* ASSUME new context structure allocated by caller but not initialized.
\* ASSUME new context structure deallocate the context before calling CloseMcroup.
\* The caller is only allowed to write out one FORM, LIST, or CAI in this top a level context (see StartMcroup and PutCAddr).

extern IFFP OpenWIFF(/\* EPTR, GroupContext \*, LONG \*/);
 /\* file, new, limit {file position} \*/ \* CLIENT\_ERROR if limit is odd. \*/

/\* Start writing a group (presumably LIST, FORM, PROP, or CAI), opening a \* nested context. The groupSize includes all nested chunks + the subtype ID.

The subtype of a LIST or CAI is a hint at the contents' FORM type(s). Pass

in FILLER if it's a mixture of different kinds.

IFFWriteBytes, and calls OpenNCroup. The caller may then write the nested This writes the chunk header via PutCkidr, writes the subtype ID via

chunks and finish by calling EndWGroup.

The OpenWGroup call sets new->clientFrame = parent->clientFrame

ASSUME caller doesn't deallocate the context or access the parent context ASSUME new context structure allocated by caller but not initialized.

before calling CloseMCroup.

\* ERROR conditions: See PutCdddr, IFFWriteBytes, OpenWCroup. \*/
extern IFFP StartWCroup(/\* GroupContext \*, ID, LONG, ID, GroupContext \* \*/);
 /\* parent, groupIype, groupSize, subtype, new \*/

/\* End a group started by StartWGroup.

\* This just calls CloseMGroup and PutCdEnd.

\* ERROR conditions: See CloseMGroup and PutCdEnd. \*/

extern IFFP EndMGroup(/\* GroupContext \* \*/);

/\* old \*/

Open the remainder of the current chunk as a group write context

This is normally only called by StartMCroup.

Any fixed limit to this group chunk or a containing context will impose

a limit on the new context. This will be called just after the group's subtype ID has been written

so the remaining contents will be a sequence of chunks.
This sets new->clientFrame = parent->clientFrame.
ASSUME new context structure allocated by caller but not initialized.
ASSUME caller doesn't deallocate the context or access the parent context

\* Absure calling CloseMGroup.

\* Lient\_ERROR if context end is odd or PutCkHdr wasn't called first. \*/

\* CLIENT\_ERROR if context end is odd or PutCkHdr wasn't called first. \*/

extern IFFP OpenMGroup(/\* GroupContext \*, GroupContext \* \*/);

/\* parent, new \*/

\*\* Close a write context and update its parent context \* This is normally only called by EndWaroup.

If this is a top level context (created by OpenWIFF) we'll set the file's EOF (end of file) but won't close the file

After calling this, the old context may be deallocated and the parent context can be accessed again. \* Amiga DOS Note: There's no call to set the EOF. We just position to the \* desired end and return. Caller must Close file at that position.
\* CLIENT\_ERROR if PutCAENd wasn't called first. \*/
extern IFFP CloseMGroup("\* GroupContext \* \*/);

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This writes a chunk header, ckSize /\* Write a whole chunk to a GroupContext. This writes a chunk header, ckSize at data bytes, and (if needed) a pad byte. It also updates the GroupContext. CLIENT\_ERROR if ckSize == szNotYetKnown. See also PutCdddr errors. \*/extern IEEP PutCk(/\* GroupContext \*, ID, LONG, BYTE \* \*/);
/\* context, ckID, ckSize, \*data \*/

Write just a chunk header. Follow this will any number of calls to 

\* If you don't yet know how big the chunk is, pass in ckSize = szNotYetKnown, \* then PutCkEnd will set the ckSize for you later. \* Otherwise, IfFWriteBytes and PutCkEnd will ensure that the specified

number of bytes get written. CLIENT\_ERROR if the chunk would overflow the GroupContext's bound,

extern IFFP PutCdHdr(/\* GroupContext \*, ID, /\* context, ddI

Write nBytes number of data bytes for the current chunk and update

GroupContext.
CLIENT\_ERROR if this would overflow the GroupContext's limit or the current chunk's ckSize, or if PutCkHdr wasn't called first, or if

\* nBytes < 0. \*/

extern IFFP IFFW-iteBytes (/\* GroupContext \*, BYTE \*, LONG \*/);
/\* context, \*data, nBytes \*/

Complete the current chunk, write a pad byte if needed, and update

\* GroupContext

\* If current chunk's ckSize = szNotYetKnown, this goes back and sets the

\* ckSize in the file.

\* CLIENT\_ERROR if PutChddr wasn't called first, or if client hasn't \* written 'ckSize' number of bytes with IFFW-iteBytes. \*/ extern IFFP PutChEnd(/\* GroupContext \* \*/);

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```
/* # bitplanes in the original source */
/* UNUSED; for consistency store 0 here */
/* how to scatter source bitplanes into destination */
/* default bitplane data for planePick */
/* selects which bitplanes to store into */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /* RowBytes computes the number of bytes in a row, from the width in pixels.*/ #define RowBytes (w) (((w) + 15) >> 4 << 1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /* MUST be UBYTEs so ">> 4" won't sign extend.*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /* Maximum number of bitplanes in RAM. Current Amiga max w/dual playfield. */
                                                                                                                                                                                                                                                                                   UMCRD w, h;

WARD x, y;

WARD x, y;

WESTE rDlanes;

Wasking masking;

Wasking masking;

WESTE rDlanes;

Wasking masking;

Wasking masking;

Wasking masking;

Wasking technique */

WARD real;

WARD transparentColor;

Waspect, yAspect;

WARD pageWidth, pageHelght;

WARD pageWidth, 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /* A CMAP chunk is a packed array of ColorRegisters (3 bytes each). */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /* Amiga RAM version of a color-register,
* with 4 bits each RGB in low 12 bits.*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /* Use this constant instead of sizeof(ColorRegister). */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ------ ColorRegister
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /* coordinates (pixels) */
                                                                                                                                                                                                  /* A BitMapHeader is stored in a BMED chunk. */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /* A DestMarge is stored in a DEST chunk. */
typedef struct {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /* A Point 2D is stored in a CRAB chunk. */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SpritePrecedence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /* ------ Point 2D -------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         UBYTE red, green, blue;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     #define sizeofColorRegister
#define y640x200Aspect 11
#define x640x400Aspect 10
#define y640x400Aspect 11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ----- DestMerge
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               UNCRD planeOnOff;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         typedef WORD Color4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     #define MaxAmDepth 6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            UNORD planeMask;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               UNORD planePick;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ) ColorRegister,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     } BitMapHeader;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          typedef struct {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      typedef struct {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          UBYTE depth;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     > DestMerge;
                                                                                                                                                                                                                                                                         typedef struct {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              UBYTE pad1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WORD x, y; } Point2D;
```

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| **************************************                        | ######################################                                                              | *****                                                         | ***************************************                                                                 |
|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| # \$Header: Make                                              | #Header: Makefile,v 1.0 85/04/02 19:29:23 kodiak Exp #                                              | # \$Header: Mal                                               | \$Header: Makefile,v 1.0 85/04/02 19:29:23 kodiak Exp \$                                                |
| # \$Locker: \$                                                |                                                                                                     | # \$Locker: \$                                                |                                                                                                         |
| # \$Log: Makefile,v \$                                        | & >´@                                                                                               | #<br># \$Log: Makefile,v \$                                   | .le,v \$                                                                                                |
| ******                                                        | *<br>************************************                                                           | ######################################                        | **************************************                                                                  |
| MAKEFILE= MAKEMETA= SRCDIRPATH= SRCDIR= SUBSYSNAME= DISKPATH= | <pre>1ffcheck.mk /usr/commodore/amlga/V1/tools/makemeta clipboard iff iffcheck cl1/c/iffcheck</pre> | MAKEFILE= MAKEMETA= SRCDIRPATH= SRCDIR= SUBSYSNAME= DISKPATH= | raw2ilbm.mk<br>/usr/commodore/amiga/V1/tools/makemeta<br>clipboard<br>iff<br>raw2ilbm<br>cli/c/raw2ilbm |
| STARTUP=<br>PELACS=<br>MYLIBS=<br>CFLACS=                     | <pre>\${LIBDIR}/startup.obj -Plab \${LIBDIR}/debug.llb '-DDFBUG'</pre>                              | STARTUP=<br>PFLACS=<br>MYLIBS=<br>CFLACS=                     | <pre>\${LIBDIR}/startup.obj -Plab \${LIBDIR}/debug.11b '-DDEBUC'</pre>                                  |
| OFILES=                                                       | lffchack.c lffr.c<br>lffchack.obj lffr.obj                                                          | CFILES=<br>OFILES=                                            | raw211bm.c iffw.c 11bmw.c packer.c<br>raw211bm.obj iffw.obj 11bmw.obj packer.obj                        |

.INCLUDE=\${MAKEMETA} SYMBOLOPT=

\${SUBSYSNAME}.1d

all:

\${SUBSYSNAME}.1d

.INCLUDE=\${PAKEMETA} SYMBOLOPT=

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```
showilbm.c iffr.c ilbur.c unpacker.c
showilbm.obj iffr.obj ilbur.obj unpacker.obj movmem.obj
                       #Header: Makefile,v 1.0 85/04/02 19:29:23 kodiak Exp $
                                                                                                                          /usr/commodore/amiga/V1/tools/makemeta
                                                                                                                                                                                                 ${LIBDIR}/startup.ob}
                                                                                                                                                                                                                    ${LIBDIR}/debug.11b
                                                                                                                                                                                                                                                                                                 ${SUBSYSNAME}.1d
                                                                                                                                                                          cl1/c/showilbm
                                                                                                                     showilbm.mk
                                                                                                                                                                                                                                                          movmem. asm
                                                                                                                                            clipboard
                                                                                                                                                                show11bm
                                                                                                                                                                                                                                   -DDEBUG
                                                                                                                                                                                                               Plab
                                                                                                                                                                                                                                                                                                                         . INCLUDE=$ {MAKEMETA}
                                                                       $Log: Makefile,v $
                                                    $Locker: $
                                                                                                                                                                 SUBSYSNAME=
DISKPATH=
                                                                                                                                 MAKEMETA=
SRCDIRPATH=
                                                                                                                      MAKEE ILE=
                                                                                                                                                                                                   STARTUP=
                                                                                                                                                                                                             PFLACS=
MYLIBS=
                                                                                                                                                                                                                                                                                 OFILES-
                                                                                                                                                                                                                                                         AFILES=
                                                                                                                                                       SECOIR=
                                                                                                                                                                                                                                     CELACS!
                                                                                                                                                                                                                                        - H-54 -
```

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```
[TBD] More extensive checking could be done on the IDs encountered in the file. Check that the reserved IDs "FCR1". "FCR9", "LIS1". "LIS9", and "CAI1". "CAI9" aren't used. Check that reserved IDs aren't used as Form types. Check that all IDs are made of 4 printable characters (trailing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           char MsgCkay[] = { "---- (IFF_OKAY) A good IFF file." };
char MsgEndMark[] = { "---- (END_MARK) How did you get this message?" };
char MsgDone[] = { "---- (IFF_DONE) How did you get this message?" };
char MsgDone[] = { "---- (DOS_ERRCR) The DOS gave back an error." };
char MsgMot[] = { "---- (NOT_IFF) not an IFF file." };
char MsgMot[] = { "---- (NO_FILE) no such file found." };
char MsgClientError[] = { "---- (ALIRY_ERRCR) IFF Checker bug."};
char MsgClientError[] = { "---- (BAD_FORM) How did you get this message??" };
char MsgRort[] = { "---- (SHORT_CHUNK) How did you get this message??" };
char MsgBad[] = { "---- (BAD_IFF) a mangled IFF file." };
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /* # groups currently nested within.*/
                                                                                                 DO NOT USE THIS AS A SKELETAL PROCRAM FOR AN IFF READER
* IFFChack.C Print out the structure of an IFF-85 file,
                                                                                                                                                                                                  This version for the Commodore-Amiga computer.
                                                                                                                                   See ShowILBM.C for a skeletal example.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /* MUST GET THESE IN RIGHT ORDER!!*/
char *IFFPMessages[-LAST_ERROR+1] = {
    /*IFF_OKAY*/ MsgOkay,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   extern IFFP GeList(/* GroupContext
extern IFFP GeLForm(/* GroupContext
extern IFFP GetProp(/* GroupContext
extern IFFP GetCat (/* GroupContext
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /*CLIENT_ERROR*/ MsgClientError,
                                          chacking for structural errors.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       '/ MsgShort,
MsgBad
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MsgChay,
MsgCndMark,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ClientFrame clientFrame;
                                                                                                                                                                                                                                                            #include "exec/types.h"
#include "libraries/dos.h"
#include "iff.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MsqDone,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /*BAD_FORM*/ MsgForm,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /*IFF_DONE*/ MsgDone
/*DOS_ERROR*/ MsgDos,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /* FORWARD REFERENCES */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /*SHORT_CHUNK*/
/*BAD_IFF*/ M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  spaces ok) . */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /*END_MARK*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     int levels;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /*NO_FILE*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     typedef struct
```

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```
/* A typical reader would read the chunk's contents, using the "Frame"
    for local data, esp. shared property settings (PROF):*/
/* IFFReadBytes(context, ...buffer, context->ckHdr->ckSize); */
return(IFF_OKAY);
                                                                                                Chumbs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  newframe = *(Frame *)parent->clientFrame; /* copy parent's frame*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       newframe = *(Frame *)parent->clientFrame; /* copy parent's frame*/
                                                                                    /* At Leaf chunk. That is, a chunk which does NOT contain other * Print "ID size". */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              return ( ReadIList (parent, (ClientFrame *) &newFrame) );
                                                                                                                                                                                                                                                                                                                                                              /* Handle a LIST chunk. Print "LIST size subTypeID"

* Then dive into it.*/
IFFP GetList (parent) GroupContext *parent; {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /* Handle a FORM chunk. Print "FORM size subTypeID" 

* Then dive into it.*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Close&Croup(&new);
return(iffp == END_MARK ? IFF_OKAY : iffp);
}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 new.clientFrame = (ClientFrame *)&newFrame,
                                                                                                                                         GroupContext *context;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1ffp = OpenRGroup (parent, &new);
                                    /* ------ AtLeaf -----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                newErame.levels++;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IFFP CetForm(parent)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   newErame.levels++;
                                                                                                                                    IFFP AtLeaf (context)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GroupContext new;
                                                                                                                                                                                       PutHdr (context);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Frame newErame;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PutHdr (parent);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PutHdr (parent);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Frame newFrame;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ChackIFFP();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PutID(1d) ID 1d; {
printf("%c%c%c", (1d>>24)&0x7f, (1d>>16)&0x7f, (1d>>8)&0x7f, 1d&0x7f);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /* Put something like "...BHED 14" or "...LIST 14 PLBM". */
PutHdr (context) GroupContext *context; {
    PutLevels ( (Frams *)context->clientFrams)->levels );
    PutID(context->cHddr.ckID);
                                                                                                                                                                                                                                                                  printf("---- Checking file '%s' -----\n", name); if (file = 0)
                                                                                                                                                                                                                                                                                                                                                                              iffp = ReadIFF(file, (ClientFrame *)&frame);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              main(argc, argv) int argc; char **argv; {
  if (argc != 1+1) {
    printf("Usage: 'iffcheck filename'\n");
  exit(0);
                         IFFP 11fp;
BPTR file = Open (name, MODE_OLDFILE);
                                                                                                                                                  frame.clientFrame.getList = GetList;
frame.clientFrame.getForm = GetForm;
frame.clientFrame.getProp = GetProp;
frame.clientFrame.getCat = GetCat;
                                                                                                                                                                                                                                                                                                                                                                                                                              Close(file);
printf("%s\n", IFFPMessages[-iffp]);
}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1f (context->subtype != NUIL_CHUNK)
PutID(context->subtype);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PutLevels(count) int count; {
    for (; count > 0; --count) {
        printf(".");
    }
}
void IFFCheck(name) char *name; {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PutN (context->cldidr.clcsize);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ------ Put... ------
                                                                                                                                                                                                                                                                                                                                1ffp = NO FILE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PutN(n) int n; {
    printf(" %d ", n);
}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IFFCheck (argv [1]);
                                                                                                                             frame.levels = 0;
                                                                             Frame frame;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              printf("\n")
```

- H-55 -

```
#include "exec/types.h"
#include "libraries/dos.h"
#include "lff.h"
                                                                                                                                                                                                                                                                                                                                                                                              IFFP 1ffp = IFF_OKAY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (file <= 0)
/* ------ GetProp // Handle a PROP chunk. Print "PROP size sublypeID".

* Then dive into it.*/
IFFP Carbriog(listContext) GroupContext *listContext;

/*ComplierBug register*/ IFFP lift;
                                                                                                                                                                                                                                          /* PROP reader for Checker. */
((Frame *)listContext->clientFrame)->levels++;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ((Frame *)listContext->clientFrame)->levels--;
                                                                                                                                                                                                                                                                                                                                                                                                                             CloseRGroup (Gnew);
return(1ffp == END_MARK ? IFF_OKAY : 1ffp);
}
                                                                                                                                                                                                                                                                                                   do {lf ( (lffp = GetPChundddr (Gnew)) > 0 )
    lffp = AtLoaf (Gnew);
} while (lffp >= IFF_GKAY);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ((Frame *)parent->clientFrame)->levels++;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ((Frame *)parent->clientFrame)->levels--;
return(lffp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IFFP GatCat (parent) GroupContext *parent;
                                                                                                                                                                                 iffp = OpenRGroup(listContext, &new);
CheckIFFP();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1ffp = ReadICat(parent);
                                                                                                                                              PutHdr (listContext);
                                                                                                       GroupContext new;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Putlidr (parent);
                                                                                                                                                                                                                                                                                                                                                                                                                               - H-56 -
```

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```
Seek(file, 0, OFEST_END);

/* Seek to end of file.*/
new->bound = Seek(file, 0, OFEST_CURRENT); /* Pos'n = #bytes in file.*/
If (new->bound < 0) return(DOS_ERROR); /* DOS being absurd.*/
Seek(file, 0, OFEST_BECINNING); /* Go to file start.*/
/* Would just do this if Amiga DOS maintained fh_End: */
/* new->bound = (FileHandle *) BADOR (file) -> fh_End: */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /* "whole file" has no parent.*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ClientFrame *clientFrame; {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        new->position = parent->position;
new->bound = parent->position + ChunkMoreBytes (parent);
new->cddidr.ckID = new->subtype = NULL_CHUNK;
new->cddidr.ckSize = new->bytesSoFar = 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GroupContext *parent0, *new0; {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     = NULL_CHUNK;
                                                                                         By Jerry Morrison and Steve Shaw, Electronic Arts.
This software is in the public domain.
IFFR.C Support routines for reading IFF-85 files. (IFF is Interchange Format File.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Set new->bound. AmigaDOS specific code.*/
                                                                                                                                                                                     * This version for the Commodore-Amiga computer
                                                                                                                                                                                                                                                                                                                                                                          /* ------ Read ------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       = parent;
= parent->clientFrame;
= parent->file;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      //FFP OpenRGroup(parent0, new0) GroupContext
register GroupContext *parent = parent0;
register GroupContext *new = new0;
IFFP 1ffp = IFF_OKAY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      new->position = 0;
new->ckRdr.ckID = new->subtype = NU
new->ckRdr.ckSize = new->bytesSoFar = 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1f ( new->bound < sizeof(ChunkHeader) )
1ffp = NOT_IFF;
return(lffp);</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                             IFFP OpenRIFF(file0, new0, clientFrame)
BPTR file0; GroupContext *new0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         register GroupContext *new = new0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          return (NO_FILE);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  new-yparent = Null,
new-yclientFrame = clientFrame;
= file;
= file;
                                                                                                                                                                                                                                                                                                                                                                                                                               ----- OpenRIFF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        register EPTR file = file0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ---- OpenRGroup ---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               new->parent
new->clientFrame
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            new->f11e
```

```
switch (Read(context->file, &context->ckHdr, sizeof(ChunkHeader))) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* Check: ckSize negative or larger than # bytes left in context? */else if (context->ckHdr.ckSize < 0 ||
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /* Non-positive ID values are illegal and used for error codes.*/ /* We could check for other illegal IDs...*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BAD_IFF if not enough bytes in the context for a ChunkHeader.*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              return (context->ckHdr.ckID = NOT_IFF);
                                                                                                                                                                                                                                                                                                                                                                                                            /* Check: Top level chunk must be LIST or FORM or CAI.
if (context->parent = NULL)
switch(context->cldHdr.ckID) {
    case FORM: case LIST: case CAI: break;
                                                                                                                                                                                                                                                                                                     case -1: return(context->cldidr.ckID = DOS_ERROR);
case 0: return(context->cldidr.ckID = BAD_IFF);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LONG nBytes; {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (context->ckHdr.ckSize < 0 ||
context->ckHdr.ckSize > remaining)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        context->position += sizeof(Chunkdeader)
                                                                                                     else if (sizeof(Chunkleader) > remaining) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sizeof(ID));
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -= sizeof (Chundieader)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           context->ckldr.ckSize = remaining;
context->ckldr.ckID = BAD_IFF;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     context->ckHdr.ckID = 1ffp,
                                                                                                                                                                                                                 /* Read the chunk header (finally). */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          context->cldHdr.ckID = BAD_IFF;
                                                                                                                              context->ckldr.ckSize = remaining
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /* ------ IFFReaubyuss
IFFP IFFReadBytes (context, buffer, nBytes)
GroupContext *context; BYTE *buffer;
= END MARK;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (context->ckildr.ckild <= 0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if (iffp != IFF_OKAY)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* Update the context. */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           return (context->ckHdr.ckID);
context->ckIddr.ckID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              default:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 break; }
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    remaining
```

```
/* Only chunk types above are allowed in a LIST/CAI.*/
                                                                                                                                                                                                                                                                                                                                                                                                                               case FORM: { iffp = (*clientFrame->getForm) (&listContext); break;
case LIST: { iffp = (*clientFrame->getList) (&listContext); break;
case CAI : { iffp = (*clientFrame->getCat ) (&listContext); break;
/* default: Includes END_MARK, IFF_DONE, BAD_IFF, NOT_IFF... */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /* By special arrangement with the ReadIList implement'n, this is trivial.*/
IEFP ReadICat(parent) GroupContext *parent; {
    return( ReadIList(parent, NULL) );
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /*----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /* No PROPs allowed after this point.*/
/* One special case test lets us handle CAIs as well as LISTs.*/ if (parent->cAHdr.ckID == CAI)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             switch (id = GetChunkHdr(context)) {
    case PROP: { id = BAD_IFF; break; }
    case FORM: { id = (*clientFrame->getForm) (context); break;
    case LIST: { id = (*clientFrame->getList) (context); break;
                                                                                                                                                                                                                                                                                          iffp = (*clientFrame->getProp) (&listContext);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               register ClientFrame *clientFrame = context->clientFrame;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GroupContext *context;
                                                                                                                                                                                                        switch (iffp = GetChunkHdr(&listContext))
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GroupContext *context;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          return(1ffp == END_MARK ? IFF_CKAY : 1ffp);
                                                                                                                        listContext.clientFrame = clientFrame;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1f (listContext.ckHdr.ckID != PROP)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       context->ckHdr.ckID = 1d = BAD_IFF;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ----- Cetf1Chunklidr -----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 propOK = FALSE; /* N
) while (iffp == IFF_OKAY);
                                                                                                                                                                                                                                                                                                                                                1ffp = BAD_IFF;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /* ------- GetFChunkHdr ----
ID GetFChunkHdr (context) Grow
register ID 1d;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1d = GetChunkdidr (context);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CloseRGroup (&listContext);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /* ------ ReadICat -----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /* ------ GetFlChunkfk
ID GetFlChunkfidr (context)
                                                                                                                                                                                                                                    case PROP: {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           if (iffp > 0)
iffp = BAD_IFF;
                                                           propOk = FALSE:
                                                                                                                                                                                                                                                                                                                                                                            break;
                                                                                                                                                                                                                                                                                                                         else
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             register ID id;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1f (1d = PROP)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           return (1d);
                                                                                                                                                                                 ~
용
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /#-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /*----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if (lifp == IFF_OKAY)
switch (lifp = GetChundddr(&context)) {
    case FORM: { lifp = (*clientErame->getForm) (&context); break;
    case LIST: { lifp = (*clientErame->getList) (&context); break;
    case CAT : { lifp = (*clientErame->getCat ) (&context); break;
    /* default: Includes IFF_DONE, BAD_IFF, NOT_IFF... */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /* Make sure we don't return an ID.*/
/* GetChundidr should'we caught this.*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        //FFP ReadIFF(file.clientErame) BPTR file; ClientErame *clientErame;
/*CompilerBug register*/ IFFP iffp;
GroupContext context;
                                                                                                                                                                                                             switch ( Read (context->file, buffer, nBytes) ) {
  case -1: {iffp = DOS_ERROR; break; }
  case 0: {iffp = BAD_IFF; break; }
  default: {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /# ------- Readilist (parent, clientFrame)
GroupContext *parent, clientFrame *clientFrame; {
GroupContext listContext;
IFFP iffp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* ------ SkipGroup ------- SkipGroup GroupContext *context; {
IFFP SkipGroup(context) GroupContext *context; {
} /* Nothing to do, thanks to GetChunkHdr */
                                                                          if (nBytes < 0)
   iffp = CLIENT_ERRCR;
else if (nBytes > ChundWoreBytes (context))
   iffp = SHCRT_CHUNK;
else if (nBytes > 0)
                                                                                                                                                                                                                                                                                                                                context->position += nBytes;
context->bytesSoFar += nBytes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1ffp = OpenRGroup(parent, &listContext);
Check[FFP();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            iffp = OpenRIFF(file, &context);
context.clientFrame = clientFrame;
                 register IFFP 1ffp = IFF_OKAY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CloseMGroup (&context);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /* ----- ReadIFF ---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if (iffp > 0)
iffp = NOT_IFF;
                                                                                                                                                                                                                                                                                                                                                                                                                                                         return(1ffp);
}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      return (1ffp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   - H-58 -
```

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/\* Yet another weird macro to make the source code simpler...\*/
#define Ififfp(expr) {if (iffp == IFF\_CWAN) iffp = (expr);}

```
/* Go to start of the file.*/
                                                                                                                                                                                                                                                                                                       /* indicates no current chunk */
                                                                                                                                                                                                                                                                                                                                                                                  liftp = PutCdddr(parent, grouplype, groupSize);
lififtp( IFFW-iteBytes(parent, (BYIE *)&subtype, sizeof(ID)) );
lifitp( OpenWCroup(parent, new) );
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           if (0 > Seak(file, 0, OFFSET_BECINNING))
    iffp = DGS_ERROR;
else if (Known(limit) & IS_ODD(limit) )
    iffp = CLIENT_ERROR;
return(liftp);
                                                                                                                    new-yposition = 0;
new-ybound = limit;
new->ckHdr.ckID = NULL_CHUNK; /* indic
new->ckHdr.ckSize = new->bytesSoFar = 0;
                                                                            = NULL;
= NULL;
= file;
                                                                                      new->clientFrame
                                                                                                                                                                                                                                                                                                                                                                                                                                return (1ffp);
                                                                             new->parent
                                                                                                         new->file
```

```
//FFP PutCdidr(context0, ckID, ckSize)
GroupContext *context0; ID ckID; LONG ckSize; {
    register GroupContext *context = context0;
    LONG minPSize = sizeof(Ghunddeader); /* physical chunk >= minPSize bytes*/
                                                                                                                                                                                                                                                                                                        /* CLIENT_ERROR if we're already inside a chunk or asked to write a other than one FORM, LIST, or CAT at the top level of a file */ /* Also, non-positive ID values are illegal and used for error codes.*/ /* (We could check for other illegal IDs...)*/ // If (context->chddr.ckID != NULL_CHUNK || ckID <= 0) return(CLIENT_ERROR); else if (context->parent == NULL) {
    switch (ckID) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          context->bytesSoEar = 0;
if (0 > Write(context->file, &context->cdHdr, sizeof(GundHeader)))
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               י אייייייי (context->bound) אל context->bound) (אל context->bound) return (CLIENT_ERROR);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LONG nBytes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 context->position + nBytes > context->bound)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  break
                                       Ififfp ( PutCHidr (context, ckID, ckSize) );
Ififfp ( IFFM-iteBytes (context, data, ckSize) );
Ififfp ( PutCkEnd (context) );
return(lffp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Case CAT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     register GroupContext *context = context0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      context->position += sizeof(ChunkHeader);
return(IFF_OKAY);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              // ifFP IFFW-1teBytes(context0, data, nBytes)
GroupContext *context0; BYIE *data;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   default: return(CLIENT_ERROR)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                cch (ckID) {
case FORM: case LIST:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if (context->position != 0)
return(CLIENT_ERROR);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  context->cdddr.ckID = ckID;
context->cdddr.ckSize = ckSize;
                                                                                                                                                                                  ---- PutCkildr -----
( ckSize = szNotYetKnown )
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1f (Known(clGlze)) {
    if (clGlze < 0)
        return(CLIENT_ERROR);</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (Known (context->bound)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1f (Known(context->bound)
                    1ffp = CLIENT_ERROR:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ----- IFFWriteBytes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                minPSize += ckSize
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            return (DOS_ERROR);
                                                                                                                                                                                                                                                                                                                                                                                                             1f ( parent->dddr.dkID == NULL_CHUNK || /* not currently writing a chunk*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1f ( old->ckHdr.ckID != NULL_CHUNK ) /* didn't close the last chunk */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    old->parent->bytesSoFar += old->position - old->parent->position;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /* top level file context
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IS_ODD(new->position) ||
(Known(new->bound) & IS_ODD(new->bound)) )
iffp = CLIENT_ERROR;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /* ------ Engwaroup -
IFFP EndWaroup(old) GroupContext *old; {
   register GroupContext *parent = old->parent;
   register IFFP Lifp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             old->parent->position = old->position;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 new->cldHdr.cldSlze = new->bytesSoFar = 0;
                                                                                                       = parent;
= parent->clientFrame;
                                                                                                                                                                 = parent->position;
= parent->bound;
= NULL_CHUNK;
              = new0
                                                                                                                                                                                                                                                                               (Known (parent->ckdkdr.ckGlze))
                                                                                                                                            = parent->file;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Enditoring -----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             return(CLIENT_ERROR);
if (old->parent == NULL) {
/* [TBD] set logical EOF */
        register GroupContext *new
register LONG ckEnd;
register IFFP 1ffp = IFF_OKAY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1ffp = CloseMCroup(old);
Ififfp( PutCkEnd(parent) );
return(1ffp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               return (IFF_OKAY);
                                                                                                                            new->clientFrame
                                                                                                                                                                                                                 new->ckdidr.ckID
                                                                                                                                                                   new->position
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             return(iffp);
                                                                                                       new->parent
                                                                                                                                                                                              new->bound
                                                                                                                                                   new->file
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            e]se
                                                                                                                                                                                                                                                                                       Įţ
```

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```
/* Haven't counted for mask plane yet*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ' (; nColorRegs > 0; --nColorRegs) {
iffp = IFFReadBytes(11bmContext, (BYTE *)&colorReg,sizeofColorRegister);
CheckIFFP();
                                                                                                                                                                                                                                                                                                                                   /* NOTE: This implementation could be a LOT faster if it used more of the 
* supplied buffer. It would make far fewer calls to IEFReadBytes (and 
* therefore to DOS Read) and to movemen. */
11/11/85
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    register int iPlane, iRow, nEmpty, nFilled;
BYIE *buf, *nullDest, *nullBuf, **pDest;
BYIE *planes[MaxSrcPlanes]; /* array of ptrs to planes & mask */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     UBYTE srcPlaneCnt = bmHdr->nPlanes; /* Haven'
LONG srcRowBytes = RowBytes (bmHdr->w);
LONG bufRowBytes = MaxPackedSize(srcRowBytes);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Compression compression = bmHdr->compression;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       int nRows = buildr->h;
```

```
novmen(buf, buffer, nFilled); /* Could be moving 0 bytes.*/
                                                if (nEmpty > ChunkMoreBytes(context)) {
   /* There aren't enough bytes left to fill the buffer.*/
   nEmpty = ChunkMoreBytes(context);
   bufsize = nFilled + nEmpty; /* heh-heh */
                                                                                                                                                                                                                                  /* Append new data to the existing data.*/
iftp = IFFReadBytes(context, &buffer[nFilled], nEmpty);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /* Decompress row to destination plane.*/
if ( UnPackRow(&buf, pDest, nEilled, srcRowBytes) )
   /* pSource, pDest, srcBytes, dstBytes */
   return(BAD_FORM);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (compression == cmpNone) {
if (nFilled < srcRowBytes) return(BAD_FORM);
movmem(buf, *pDest, srcRowBytes);
buf += srcRowBytes;</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Copy uncompressed row to destination plane.*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           *pDest += srcRowBytes;
                                                                                                                                                                                                                                                                                                                                                     buf = buffer;
nFilled = bufsize;
                                                                                                                                                                                                                                                                                             ChackIFFP();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   return(IFF_OKAY);
}
                                                                                                                                                                                                                                                                                                                                                                                                                nEmpty
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   · #
```

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```
/* Must buffer a compred row*/
/* bad arg */
/* inconsistent */
/* inconsistent */
/* inconsistent */
/* too many for this routine*/
/* too many for this routine*/
                                                                                                                                                                                                                                                                                                                                                                                                    iffp = IFFWriteBytes(context, (BYTE *)&colorReg, sizeofColorRegister);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /* NOTE: This implementation could be a LOT faster if it used more of the * supplied buffer. It would make far fewer calls to IFFW iteBytes (and * therefore to DOS Write). */
IFFP PutBODY (context, bitmap, mask, bmHdr, buffer, bufsize)
GroupContext * context: struct BitMap * bitmap: BYTE * mask; BitMapHeader * bmHdr; BYTE * buffer; LONG bufsize;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Compression compression = bmHdr->compression;
int planeCnt;
/* number of bit planes including mask */
                                                                                                                                                                                                        1ffp = PutCldidr(context, ID_CMAP, nColorRegs * sizeofColorRegister);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /* Copy the ptrs to bit & mask planes into local array "planes" */
for (Plane = 0; IPlane < dstDepth; IPlane++)
planes[IPlane] = (BYTE *)bitmap->Planes[IPlane];
if (mask != NULL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SYTE *planes[MaxAmDepth + 1]; /* array of ptrs to planes & mask */
                                                                                                                                                                                                                                                                                                                                                 6 0xf0;
                                                                                                                         depth = MaxAmDepth;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   planeCnt = dstDepth + (mask = NULL ? 0 : 1);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   =
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  =
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 if (bufsize < MaxPackedSize(rowBytes)</pre>
                                                                                                                                                                                                                                                                                            --nColorRegs)
                                                                                                                                                                                                                                                                                                                                            *colorMap
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LONG rowBytes = bitmap->BytesPerRow;
int dstDepth = bmHdr->nPlanes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             rowBytes != RowBytes (bmildr->w)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          compression > cmpByteRuni
bitmap->Rows != bmHdr->h
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      bitmap->Depth < dstDepth
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     register int iPlane, iRow;
register LOMC packedRowBytes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ---- PutBODY -----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     dstDepth > MaxAmDepth )
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1ffp = PutCkEnd(context);
               register LONG nColorRegs
                                                                                                                                                   nColorRegs = 1 << depth;
                                                                                                                            1f (depth > MaxAmDepth)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 return (CLIENT_ERROR)
                                                                    ColorRegister colorReg
                                                                                                                                                                                                                                                                                            for (; nColorRegs; colorReg.red = (
                                                                                                                                                                                                                                                                                                                                            colorReg.green =
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ++colorMap;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         return(1ffp);
                                                                                                                                                                                                                                      CheckIFFP();
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Int masking, compression, transparentColor, pageMidth, pageHeight; /* Masking, Compression, UWRD, WORD, WORD,
               11/11/85
                                                                                                                                                                                                                                                                                                                                    switch (pageHeight) {
    case 200: {bmHdr->xAspect = x640x200Aspect;
        bmHdr->yAspect = y640x200Aspect; break;}
    case 400: {bmHdr->xAspect = x640x400Aspect;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /* Default position is (0,0).*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       case 400: {bmidr->yAspect = y320x200Aspect; break;}
case 400: {bmidr->xAspect = x320x400Aspect;
bmidr->yAspect = y320x400Aspect; break;}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             bmidr->yAspect = y640x400Aspect; break;}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         return( IS_ODD(rowBytes) ? CLIENT_ERROR : IFF_OKAY );
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               switch (pageHeight) {
    case 200: {bmHdr->xAspect = x320x200Aspect;
                                                                                                                                                                                                                                                                                                                                                                                            pageWidth, pageWeight)
BitWapHeader *bmidr0; struct BitWap *bitmap;
                                                                                 By Jerry Morrison and Steve Shaw, Electronic Arts
This software is in the public domain.
* ILBW.C Support routines for writing ILBM files
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            register WORD rowBytes = bitmap->BytesPerRow;
                                                                                                                                                                  * This version for the Commodore-Amiga computer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 bmidr->x = bmidr->y = 0;  /* Default positionider->nPlanes = bitmap->Depth;
bmidr->masking = masking;
bmidr->compression = compression;
bmidr->padl = 0;
bmidr->transparentColor = transparentColor;
bmidr->xAspect = bmidr->yAspect = 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     register BitMapHeader *bmHdr = bmHdr0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* Masking, Compression, UMORD
                         (IFF is Interchange Format File.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              bmidr->pageileight = pageileight;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /*------ PutCMAP ------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     bmHdr->pageWidth = pageWidth.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      bmHdr->w = rowBytes << 3;
bmHdr->h = bitmap->Rows;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       else if (pageWidth = 640)
                                                                                                                                                                                                                  #include "exec/types.h"
#include "packer.h"
#include "ilbm.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        if (pageWidth = 320)
```

/\*-----

IFFP PutCMAP(context, colorMap, depth)
GroupContext \*context; WCRD \*colorMap; UBYIE depth;

```
planes[dstDepth] = mask;

/* Write out a BODY chunk header */
iffp = PutCddir(context, ID_BODY, szNotYetKnown);

Check[FFP();

/* Write out the BODY contents */
for (iRow = bwildr->h; iRow > 0; iRow--) {
    for (iRow = bwildr->h; iRow > 0; iRow--) {
        if (compression = capNone) {
            iffp = IFFN+iteBytes(context, planes[iPlane], rowBytes);
            planes[iPlane] += rowBytes;
        }

/* Compress and write next row.*/
else {
        buf = buffer;
        }

/* Compress and write next row.*/
else {
            buf = buffer;
        }

/* Compress and write next row.*/
else {
            buf = buffer;
        }

/* Enish the chunk */
iffp = IFFN*iteBytes(context, buffer, packedRowBytes);
        }

/* Finish the chunk */
iffp = PutCdEnd(context);

return(iffp);
}
```

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```
/* number of chars in buffer */
/* buffer index current run starts */
                                                                                                                        [0..127] : followed by n+1 bytes of data.
[-1..-127] : followed by byte to be repeated (-n)+1 times.
-128 : NOOR.
* packer.c Convert data to "cmpByteRun1" run compression.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ++putSize; }
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BYTE *dest; int nn, cc; {
                                          * By Jerry Morrison and Steve Shaw, Electronic Arts
* This software is in the public domain.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PutByte(nn-1);
for(1 = 0; 1 < nn; 1++)    PutByte(buf[1]);
return(dest);</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   char buf[256]; /* [TBD] should be 128? on stack?*/
                                                                                                                                                                                                             * This version for the Commodore-Amiga computer.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            #define OutDump(nn) dest = PutDump(dest, nn)
#define OutRun(nn,cc) dest = PutRun(dest, nn, cc)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BYTE *PutDump (dest, nn) BYTE *dest; int nn; {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (*source++)
{ *dest++ = (c);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BYTE *PutRun(dest, nn, cc)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PutByte (- (nn-1));
PutByte (cc);
                                                                                                                                                                                                                                                   #include "exec/types.h"
#include "packer.h"
                                                                                                   control bytes:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              return(dest);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             short rstart = 0;
                                                                                                                                                                                                                                                                                                                                                                                                   #define MaxRun 128
#define MaxDat 128
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      #define GetByte()
#define PutByte(c)
                                                                                                                                                                                                                                                                                                                                                                                  define MinRun 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LONG putSize;
                                                                                                                                                                                                                                                                                                                   #define DUMP
#define RUN
```

```
/a Rawalles.c attended to the contract of the 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BitMapHeader bmHdr;
GroupContext fileContext, formContext;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /* Size of the buffer for PutBODY. */ #define bufSize 512
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Normal return result is IFF_OKAY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (compressed)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   #include "graphics/gfx.h" #include "ilbm.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                #include "exec/types.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IFFP 1fferr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FORM ILEM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* first of run */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              case RUN: 1f ( (c != lastc) || ( nbuf-rstart > MaxRun)) {
   /* output run */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /* If the buffer is full, write the length byte,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           mode = RUN; /* no dump in progress, so can't lose by making these 2 a run.*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if (rstart > 0) OutDump(rstart);
                                                                      dest = *pDest;
putSize = 0;
buf[0] = lastc = c = GetByte(); /* so have valid lastc */
huf = 1; rowSize--; /* since one byte eaten.*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (c == lastc) {
  if (nbuf-rstart >= MinRun) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          rstart = 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             OutRun(nbuf-1-rstart,lastc);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                switch (mode) {
    case DUMP: OutDump(nbuf); break;
    case RUN: OutRun(nbuf-rstart,lastc); break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          else if (rstart = 0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      OutDump (nbuf-1);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  else rstart = nbuf-1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          buf[0] = c;
nbuf = 1; rstart = 0;
mode = DUMP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         buf[0] = c;
nbuf = 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             then the data */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               mode = RUN:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if (nbuf>MaxDat)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  breek;
                                                                                                                                                                                                                                                                                                                                                                                                                  for (; rowSize; --rowSize) {
  buf[nbuf++] = c = GetByte();
  switch (mode) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         case DUP:
                              source = *pSource;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   *pSource = source;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        return (putSize);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      *pDest = dest;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              lastc = c;
```

```
CAErr (OpenWIFF (file, &fileContext, szNotYetKnown));
CAErr (StartWGroup (&fileContext, FORM, szNotYetKnown, ID_ILBM, &formContext));
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Write an entire BitMap as a FORM ILBM in an IFF file. This procedure assumes the image is in the Amiga's 320 \times 200 display mode.
Read an raw raster image file and write an IFF FORM ILBM file. 11/12/85.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             #define CkErr (expression) {if (ifferr = IFE_CKAY) ifferr = (expression);}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ifferr = InitBWHdr(&bmHdr, bitmap, mskNone, cmpByteRun1, 0, 320, 200);
/* You could write an uncompressed image by passing cmpNone instead
* of cmpByteRun1 to InitBWHdr. */
bmHdr.nPlanes = depth; /* This must be <= bitmap->Depth */
if (mask != NULL) bmHdr.maskIng = mskdasMask;
bmHdr.x = xy->x; bmHdr.y = xy->y;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             The utility program IFFCheck would print the following outline of the resulting file:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IFEP PutAnILBM(file, bitmap, mask, colorMap, depth, xy, buffer, bufsize)
LONG file; struct BitMap *bitmap; BYIE *mask; WCRD *colorMap;
UBYIE depth; Point2D *xy; BYIE *buffer; LONG bufsize;
                                                                                        By Jerry Morrison and Steve Shaw, Electronic Arts.
This software is in the public domain.
                                                                                                                                                                                                                          USE THIS AS AN EXAMPLE PROCRAM FOR AN IFF WRITTER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GKErr ( PutBMED (& formContext, & buildr) );
GKErr ( PutGMAP (& formContext, colorMap, depth) );
```

```
Nov 13 17:35 1985 raw2ilbm.c Page 2
```

3 11:03 1985 showilbm.c Page 1

```
CACRTY ( PutBODY (&formContext, bitmap, mask, &buildr, buffer, bufsize) );
                                                                     CdErr( EndNG-oup(&formContext) );
CdErr( CloseMG-oup(&fileContext) );
return( ifferr );
```

Put a picture into an IFF file.

{
 BYTE buffer[bufSize];
 return( PutAnILBM(file, bitmap, NUL,
 colorMap, bitmap->Depth, &millPoint,
 bufSize) );

utPicture(file, bitmap, colorMap) LONG file; struct BitMap \*bitmap;

IFFP PutPicture(file, bitmap, Point2D nullPoint = {0, 0};

That'll compile a program that skips all LISTs and PROPs in the input file. It will look in CATs for FORMs ILBM. That's suitable for most uses.

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Dec 3 11:03 1985

set Fancy to 1. \*/

For a fancy version that handles LISTs and PROPs,

define Fancy 1

```
{ "(CLIENT_ERROR) ShowILBM bug or insufficient RAM."); { "(CLIENT_ERROR) ShowILBM bug or insufficient RAM."); { "(SHOL_CRUNK) A malformed FORM ILBM." }; { "(SHORT_CRUNK) A malformed FORM ILBM." }; { "(SAD_IFF) A mangled IFF file." };
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ILEME rame
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ILE Frame
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /* ILEMErame is our "client frame" for reading FORMs ILEM in an IFF file.

* We allocate one of these on the stack for every LIST or FORM encountered

in the file and use it to hold BMED & CMAP properties. We also allocate

an initial one for the whole file.

* We allocate a new GroupContext (and initialize it by OpenRIFF or

* OpenRG-oup) for every group (FORM, CAI, LIST, or FROP) encountered. It's

* just a context for reading (mested) chunks.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ILE Frame
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ILB Frame
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ILB Erame
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          If we were to scan the entire example file outlined below:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GroupContext
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GroupContext
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GroupContext
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GroupContext
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GroupContext
                                                                                                                                                                                                                                                                                                                                                                                     /* THESE MUST APPEAR IN RICHT ORDER!! */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ReadPicture+ReadIFF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SetL11LBM+Read1L1st
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /*CLIENT_ERROR*/ MsgClientError,
                                                                                                                                                                                                                                                                                                                                                                                                                                     char *IFFPMessages[-LAST_ERROR+1] =
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /*----- ILBM reader -----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   */ MsgShort,
MsgBad
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  proc(s)
char MsgNoFile[] = { "(rechar MsgClientError[] = { "(rechar MsgCneff] = { "(rechar MsgCorn[] = { " | rechar MsgCorn[] = {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CatCMAP
CatBMID
CatFoILBM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CetFoILBM
CetBODY
CetFoILBM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MsgOkay,
MsgEndMark,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SetPrileM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ReadICat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MagNoF 116.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                typedef struct {
   ClientFrame clientFrame;
   UBYTE foundEMED;
   UBYTE nColorRegs;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CetBODY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MsqDone,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /*BAD_FORM*/ MsgForm,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /*IFF_DONE*/ MsgDone
/*DOS_ERRCR*/ MsgDos,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /*SHORT_CHUNK*/
/*BAD_IFF*/ M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              --whole file--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /*NOT_IFF*/
/*NO_FILE*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "*END_MARK"/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PROP ILBM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FORM ILEM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /*IFE_OKAY*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FORM ILEM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BODY
FORM ILEM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CATAP
HASED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          reading
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BODY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LIST
```

- H-67 -

/\* NOTE: For a simple version of this program, set Fancy to 0.

chunks, e.g. CRAB or CAME, add

Color4 colorMap[maxColorReg];
/\* If you want to read any other property
\* fields to this record to store them. \*/

BitMapHeader bmHdr

```
/* mod by rob peck 12/3, (missed |) */
vp.DWidth = ptilbmframe->bmHdr.pageWidth; /* Physical display WIDTH */
vp.DHeight = ptilbmframe->bmHdr.pageMeight; /* Display height */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* Delay 5 seconds. */
                                                                                                                                                                                                                                                                                                                                                                                                                                           /* Always show the upper left-hand corner of this picture. */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LoadRCB4 (6vp, ptilhmFrame->colorMap, ptilhmFrame->nColorRegs);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        for (1 = 0; 1 < 5*60; ++1) WaltTOF(); /* Delay 5 sec./* NOTE: We should switch back to the CLI screen here...*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /* Always display it in upper left corner of screen.*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /* Specify where on screen to put the ViewPort. */
vp.DxOffset = ptilbmFrame->bmiddr.x;
vp.DyOffset = ptilbmFrame->bmiddr.y;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if (ptilbmFrame->bmHdr.pageHeight > 200)
                                                               Interface to Amiga graphics ROM routines
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                if (ptilbmFrame->bmHdr.pageWidth <= 320)
                                                                                                                                                                         ILBWFrame *ptilbmFrame;
                                                                                                                                                                                                                                                                                                                                                                                        rasinfo.BitMap = &bitmap;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    else vp. Modes = HIRES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                vp.Rasinfo = &rasinfo;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    rasinfo. RxOffset = 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             rasinfo.RyOffset = 0:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       v. Modes |= LACE;
                                                                                                                                                                                                                                                                                                                                                               rP.BitMap = &bitmap;
                                                                                                                                            DisplayPic (ptilbonErame
                                                                                                                                                                                                                                                                                                                                  InitRastPort (&rP):
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Make Wort (Kv, Kvp);
                                                                                                                                                                                                                                                                                                            v.ViewPort = 6vp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           vp.Modes = 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                InitVPort (&vp);
                                                                                                                                                                                                                                                                              InitView (6v);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LoadView (&v);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WaltBlit ()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MrgCop (6w)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WaltIOF ()
                                                                                                                                                                                                                          Int 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     #end1f
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         #e]ge
```

```
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```

```
or
•
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             To read a FORM type that contains a variable number of data chunks--e.g. a FORM FIXT with any number of CHRS chunks--replace the ID_BODY case with an ID_CHRS case that doesn't set iffp = IFF_DOME, and make the END_MARK
                                                                                                                    /* not enough RAM for the bitmap */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      To read more kinds of chunks, just add clauses to the switch statement. To read more kinds of property chunks (CRAB, CAMC, etc.) add clauses to the switch statement in GetPrILBM, too.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Called via ReadPicture to handle every PROP encountered in an IFF file
                                                                                                                                                                                        case END_MARK: { iffp = BAD_FORM; break; } /* No BODY chunk! */
} while (iffp >= IFF_OKAY); /* loop if valid ID of ignored chunk.
* subroutine returned IFF_OKAY (no errors).*/
      /* Euroka */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          if (parent->subtype != ID_ILBM)
return(IFF_OKAY); /* just continue scaning the file */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GroupContext propContext;
ILBErame *ilbmFrame = (ILBErame *)parent->clientFrame;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1ftp = GetBMID(&propContext, &ilbuframe->bmildr);
1f (1ffp = IFF_OKAY) 1ffp = IFF_DONE;
                                                                                                                                                                                                                                                                                                                                                                                                                       /* If we get this far, there were no errors. ^*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    iFFP GetPrILBM(parent) GroupContext *parent; {
  /*compilerBug register*/ IFFP 1ffp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 do switch (iffp = GetPChunkHdr(&propContext))
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1ffp = OpenRGroup(parent, &propContext)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Reads PROPs ILBM and skips all others.
                                                                                                                                                                                                                                                                                                                                               1f (1ffp != IFF_DONE) return(1ffp)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       case do whatever cleanup you need.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  11bmFrame->foundBMHD = TRUE;
```

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```
/^{44} maino() detains a constant and /
                                                                                                                                                                                                                                                                                                                       if (load) { /* load and display the picture */
if( !(GfxBase = (struct GfxBase *)OpenLibrary("graphics.library",0)) )
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              * bitmap.Rows * bitmap.Depth);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /* free all resources */
        iffp = ReadIFF(file, (ClientFrame *)&iFrame);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             printf("\nUsage: 'ShowILBM filename'")
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             printf(" %s\n", IFFPMassages[-1ffp]);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           printf("Showing file '%s' ...", argv[1]);
                                                                                                                                                                                                                                                                                                                                                                                                  file = Open(filename, MODE_OLDFILE);
1f (file)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FreeMem(bitmap.Planes[0],
bitmap.BytesPerRow
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FreeCprList (v.LOFCprList);
                                                                                                                                                                                                                                                                                                                                                                                                                                            iffp = ReadPicture(file);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FreeVPortCopLists (&vp)
                                                                                                                                                                                                         int load; char *filename
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /* cleanup */
(bitmap.Planes[0])
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CloseLibrary (GfxBase)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 char **argv;
                                                                                                                                                                            void main0 (load, filename)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            main0(1, argv[1]);
main0(0, NULL);
                                                                                                                                                                                                                                                                           IFFP 1ffp = NO FILE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    vold main (argc, argv)
                                                                                                                                                                                                                                                                                                                                                                              exit (0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               printf("\n");
exit(0);
}
                                                       Close(file);
return(iffp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1f (argc < 2)
                                                                                                                                                                                                                                                   LONG file;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Int argc;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        else {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  else
                                            épropContext, (MCRD *) ilbuFrame->colorMap, &ilbuFrame->nColorRegs);
                                                                                                                                                                                                                                                                                                                                                                                   ilbmErame->nColorRegs = maxColorReg; /* we have room for this many */
                                                                                                                                                                                                                                                                                      /- initialize the top-level client frame's property settings to the program-wide defaults. This example just records that we haven't read any BMED property or CMAP color registers yet. For the color map, that means the default is to leave the machine's color registers alone.

* If you want to read a property like CRAB, init it here to (0, 0). */
iFrame.foundBMED = FALSE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          newFrame = *(ILBMErame *)parent->clientErame; /* copy parent frame */
                                                                                                                                                                                                                                                                                                                                       Called via ReadPicture to handle every LIST encountered in an IFF file.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    * Read a picture from an IFF file, given a file handle open for reading.
                                                                                          return ( ReadIList (parent, (ClientFrame *) &newFrame) );
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   iLBMErame iFrame; /* Top level "client frame".*/
IFFP iffp = IFF_OKAY;
                                                                                                                                                                                                                                                                                                                                                                                                                                 IFFP GetLillHM(parent) GroupContext *parent; {
    ILBErame newFrame; /* allocate a new Frame */
                                                                                                                                                                   Close&Group (&propContext); return(1ffp = END_MARK? IFF_OKAY: 1ffp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             iFrame.clientFrame.getForm = GetFoILBM;
iFrame.clientFrame.getCat = ReadICat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         iFrame.clientFrame.getList = SkipGroup;
iFrame.clientFrame.getProp = SkipGroup;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  iFrame.clientFrame.getList = GetLilLBM
iFrame.clientFrame.getProp = GetPrlLBM
                          1ffp = CetCMAP(
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          IFFP ReadPicture (file)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LONG file;
                                                                                                                                                                                                                                            #end1f
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             #end1f
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          #end1f
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   - H-69
```

```
/*----
                                                        /* urpacker.c Convert data from "cmpByteRun1" run compression. 11/11/85
                                                                                                                                                               control bytes: [0..127] : followed by n+1 bytes of data. [-1..-127] : followed by byte to be repeated (-n)+1 times.-128 : NOOP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         goto ErrorExit;
goto ErrorExit;
; ) while (--n > 0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if ( (srcBytes -= 1) < 0 ) goto ErrorExit;
if ( (dstBytes -= n) < 0 ) goto ErrorExit;
c = UCetByte();</pre>
                                                                                                          By Jerry Morrison and Steve Shav, Electronic Arts. This software is in the public domain.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            while(dstBytes > 0) {
  if (srcBytes -= 1) < 0) goto ErrorExit;</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        do { UPutByte(c); } while (--n > 0);
                                                                                                                                                                                                                                                          * This version for the Commodore-Amiga computer.
                                                                                                                                                                                                                                                                                                                                                                    /*----- UnPackRow ------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          UPutByte (UCetByte());
                                                                                                                                                                                                                                                                                                                                                                                                       (*source++)
(*dast++ = (c))
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (srcBytes -= n) < 0 ) (dstBytes -= n) < 0 )
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* success! */
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         else 1f (n != minus128) {
n = -n + 1;
                                                                                                                                                                                                                                                                                           #include "exec/types.h"
#include "packer.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  n = UCetByte();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1f (n >= 0) {
                                                                                                                                                                                                                                                                                                                                                                                                      #define UCetByte()
#define UPutByte(c)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           error = FALSE;
```

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\*pSource = source; \*pDest = dest; return(error);

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## Appendix I

# Printer-Dependent Source Code

This appendix contains the printer-dependent source code for the following printers:

hpplus - Hewlett Packard LaserJet Plus

okimate20 - Okidata

epson - Epson X-80 series

diablo\_c - Diablo C-150

In addition, this appendix includes macros.i, which is required in order to assemble any of the ".asm" files.

These files are intended to aid developers in creating their own custom printer drivers that can be added to the DEVS: directory on an AmigaDOS disk. The documentation that explains the contents of these files is in the "Printer Device" chapter of the Amiga ROM Kernel manual.

| -               |
|-----------------|
| 1 Page          |
| macros.         |
| 1985            |
| 4 15:19         |
| )<br> <br> <br> |

|       | ******   | ******    | *******                    |                                         |
|-------|----------|-----------|----------------------------|-----------------------------------------|
|       |          | printer   | device m                   | printer device macro definitions        |
|       |          | externa   | l definit                  | * external definition macros            |
|       | XREF_EXE |           | MACRO                      | 1:                                      |
|       | 7        | AKE       | ENDM                       | 1,00,1                                  |
|       | XREE_CEX | ,         | MACRO                      | 7                                       |
|       | 7        | rker<br>T | ENDM                       | TYO/I                                   |
|       |          | Library   | * library dispatch macros  | macros                                  |
|       | CALLEDE  |           | MACRO CALLLIB _LVO\1 ENDM  | LVOV.1                                  |
| - I-1 | LINKEXE  |           | MACRO<br>LINKLIB _<br>ENDM | MACRO<br>LINKLIB LVO\1,_SysBase<br>ENDM |
| -     | LINKCEX  |           | MACRO<br>LINKLIB<br>ENDM   | MACRO<br>LINICIB LVO\1,_GfxBase<br>ENDM |

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| /* diablo C-150 command table */                                 | and table */                                              |                                                                    |                                         | "\377",                                              | /*US char set                                                                        | ESC(B */<br>ESC(R */ |
|------------------------------------------------------------------|-----------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------|------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------|
| /***** printer.devic                                             | ***** printer.device/printers/Diablo_C-150_functions      | 0_funct                                                            | Ons established                         | "\377",                                              | /*German char set                                                                    | ESC(K */             |
| * NAME                                                           |                                                           |                                                                    |                                         | 377"                                                 | /*Danish I char set                                                                  | ESC E */             |
| * Diable C-150 fu                                                | Diablo C-150 (unccions implemented)                       |                                                                    |                                         | "\377",                                              | t FNT 6                                                                              |                      |
| <ul> <li>aRIS, aIND, aNEL,</li> <li>aSLPP, aLMS, aRMS</li> </ul> | anel,<br>, arms,                                          |                                                                    |                                         | "\377",<br>"\377",                                   | Ħ                                                                                    |                      |
| # aHTS, aTBC0,                                                   | ahts, atboo, atbos, atboall, atboall                      | H.                                                                 |                                         | "\377",<br>"\377",                                   | /*Norwelgen char set FNI 9<br>/*Danish II char set*/                                 | <b>/</b> # 6         |
| * special funct * aRIN, aSLRM,                                   | special functions implemented:<br>aRIN, aSLRM, aSFC, aSBC |                                                                    |                                         | "\377",                                              | /*proportional on */                                                                 |                      |
|                                                                  |                                                           | *******                                                            | /************************************** | 377"                                                 | , a                                                                                  |                      |
| char *CommandTable[]=                                            |                                                           |                                                                    |                                         | 377".                                                |                                                                                      |                      |
| "\375\033\015P\375",<br>"\377", \41n                             | SP\375", /*reset<br>/*initialize*/                        |                                                                    | RIS ESC "/                              | "\377",<br>"\377",                                   | <pre>/*auto right justify JEI / */ /*auto full justify JEY 3,6</pre>                 |                      |
| "\012",<br>"\015\012"                                            | /* 1f<br>/* refure 1f                                     | ON I                                                               | ESCD */                                 | "\377",                                              | /*auto justify off JFY 0 */                                                          | _                    |
| "\377",                                                          | /* reverse lf                                             | RI                                                                 | ESCH */                                 | "\377";                                              | /*auto center on JFY 2,6                                                             | <b>&gt;</b>          |
| "\377",                                                          | /*normal char set                                         | 808                                                                | ESC[0m */                               | "\377",                                              | 1/8" line space                                                                      |                      |
| "\377",<br>"\377",                                               | /*italics on                                              | e 6                                                                | ESC[3m */<br>ESC[23m */                 | "\377"<br>"\033\014"                                 | /* 1/6" line spacing DECVERP /* set form length DECSIPP                              | ESC[1z */            |
| "(371")                                                          | /*underline on                                            |                                                                    | ESC[4m */                               | "\377",                                              | perf skip n */                                                                       |                      |
| "\377",<br>"\277",                                               | /*underline off                                           | 808<br>808<br>808<br>808<br>808<br>808<br>808<br>808<br>808<br>808 | ESC[24m */                              | "\377",                                              | /* perf skip off */                                                                  |                      |
| "\377",                                                          | /*boldface off                                            | SGR 22                                                             | ESC[22m */                              | "\0339",                                             |                                                                                      | ESC[Pn1;Pn2s */      |
| "\377",<br>"\277",                                               | /* set foreground color */                                | lor */                                                             |                                         | , 10330",                                            | /* Right margin set "/                                                               | Recipetions #/       |
| `/s\                                                             | / sec packground color                                    |                                                                    |                                         | "\377"                                               | Bottom marg set */                                                                   | E- [5111, 5114       |
| "\377",                                                          | /*normal space                                            | DECSHOR                                                            |                                         | "\377",                                              | /* T&B margin set STBM                                                               | ESC(Pn1; Pn2r */     |
| "\377"                                                           | /*elite on<br>/*elite off                                 | DECSHOR                                                            | DECSHORP ESC(1v */                      | /* Clear mard                                        | argın sec                                                                            |                      |
| "\377",                                                          | /* fine on */                                             |                                                                    |                                         | "\03315\015\033r90\015"                              | 33r90\015",                                                                          |                      |
| "\377"                                                           | /*enlarged on                                             | CSM (st                                                            | (special) */                            | "\0331",                                             | Set horiz tab                                                                        | ESCH */              |
| "\377",                                                          | /*enlarged off                                            | <b>F</b>                                                           | ecial) */                               | "\377",<br>"\0338"                                   | /* Set vertical tab VIS /* Cir horiz tab TBC 0                                       | ESCJ */              |
| "\377",                                                          | /*Shadow print on*/                                       |                                                                    |                                         | "\0332",                                             | <b>8</b> 4                                                                           | ESC39 */             |
| "\377",                                                          | /*doublestrike on*/                                       |                                                                    |                                         | "\377"                                               | /* Clr all v tabs TBC 4                                                              | ESC49 */             |
| "\377",                                                          | /*doublestrike off*/                                      |                                                                    |                                         | "\0332",                                             |                                                                                      |                      |
| "\377",                                                          | /* NLQ of f*/                                             |                                                                    |                                         | /* sec detault tabs<br>"\03319,17,25,33,41<br>"\277" | . caos "/<br>.33,41,49,57,65,73,81,89,97,105,113,121,129"<br>/* actorded commands #/ | 15, 113, 121, 129",  |
| "\377",                                                          | /*superscript on                                          | PLU                                                                | <b>/•</b>                               |                                                      |                                                                                      |                      |
| "\377",                                                          | /*superscript off                                         | PLD (sq                                                            | (special) */ }:   (special) */          |                                                      |                                                                                      |                      |
| 1,377"                                                           | /*subscript off                                           |                                                                    | (special) */                            |                                                      |                                                                                      |                      |
|                                                                  | ormalize "/<br>/* partial line up                         | PLU                                                                | ESCL */                                 |                                                      |                                                                                      |                      |
| "\377"                                                           | /* partial line down PLD                                  | PLD                                                                | ESCK */                                 |                                                      |                                                                                      |                      |

```
outputBuffer[x++]='@';
outputBuffer[x++]=ISOcolorTable[("currentVMI)&15];
outputBuffer[x++]=ISOcolorTable[((("currentVMI)&240)/16)];
return(x);
                                                                                                                                                                                                                                                                                                      1f(*command==aRIS) PD->pd_PWaitEnabled=253;
  if (Parms [0]==49) Parms [0]=47;
                                                                                                                        output Buffer [x++]=1/033^{\circ};
                                                                                                                                                                                                                                                                                                                                                          return(0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         initMarg[2]=(char) ((Parms[0]/10)+'0');
initMarg[3]=(char) ((Parms[0]-(UBYIE) (Parms[0]/10)+'0');
initMarg[7]=(char) ((Parms[1]/10)+'0');
initMarg[8]=(char) ((Parms[1]-(UBYIE) (Parms[1]/10)+'0');
while (y<10) outputBuffer [x++]=initMarg[y++];</pre>
                                                                                                                                                                        /***** printer.device/printers/Diablo_C-150_special_functions ******
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if(*command==aRIN) {
    *currentVMI=0x70; /* white background, black text */
    outputBuffer[x++]=\\015';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 static BYTE ISOcolorTable[10]= {
    49,51,53,52,55,50,54,48,49,49 };
static unsigned char initMarg[]="\033100\015\033r00\015";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Parms[0]=(PD->pd_Preferences.PrintLeftMargin);
Parms[1]=(PD->pd_Preferences.PrintRightMargin);
#command=aSIRM;
                                                                                                                                                                                                                                                                                                                                                                             DoSpecial (command, output Buffer, vline, current VMI, crlfflag, Parms) char output Buffer[];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1f(Parms[0]==39)Parms[0]=30; /* set defaults */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BYTE *cultne;
UBYTE *currentVMI; /* used for color on this printer */
BYTE *crlfflag;
                                                                                                                        Diablo C-150 special functions implemented:
/* diablo C-150 special printer functions */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Parms [1]=Parms [1]+5;
1f (Parms [1]>90) Parms [1]=90;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       )
if(*command==aSLRM) {
    Parms[0]=Parms[0]+4;
    if(Parms[0]<5)Parms[0]=5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              output Buffer [x++j=-1012];
                                                                                                                                                                                                                           "exec/types.h"
                                                                                                                                                                                                                                                                                                                             extern struct PrinterData *PD;
                                                                                                                                                                                                                                               #include "devices/printer.h"
#include "devices/prtbase.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       return(x);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            )
1f(*command==aSFC)
{
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Int x=0;
                                                                                                                                                                                                                                                                                                                                                                                                                             UNORD *command:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               UBYTE Parms [];
                                                                                                                                                                                                                             #include
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 当
- I-3
```

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printer

SECTION

initGLErr: MOVE.L LINGESCE initPAErr: MOVE.L LINKEXE initilerr: MOVE.L LINKEXE ILNams: DC.B C.B initDLErr: MOVEQ BRA.S CLName: DC.B DC.B DC.B DL.Name: "axec/memory.1"
"axec/ports.1"
"axec/libraries.1" "devices/macros.1" \*----- Imported Functions ---exec/types.1" exec/nodes.1" exec/lists.1" MOVE.L. 4 (A7), PD LEA \_PEDData (PC), A0 MOVE.L. A0, PED MOVE.L. A6, - (A7) MOVE.L. AbsExceBase, A MOVE.L. A6, SysBase PED SysBase DOSBase GfxBase IntuitionBase printer, CODE printer, DATA \*----- Included Files ----CloseLibrary OpenLibrary AbsExecBase ---- Exported Globals PED DC.L 0
SysBase DC.L 0
DOSBase DC.L 0
GfxBase DC.L 0
IntuitionBase DC.L \_Init \_Expunge \_Open PEDData Close MOVE.L XREF\_EXE XREF\_EXE XREF SECTION INCLUDE INCLUDE INCLUDE INCLUDE INCLUDE INCLUDE INCLUDE SECTION XREF \_Init:

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;----- open the dos library LEA Diname (PC), Al MCVEQ #0, DO CALENE OpenLibrary MCVE.L D0, DOSBase BEQ initDiErr

;----- open the graphics library LEA GLName(PC).Al MOVEQ #0.Do CALLEX OpenLibrary MOVE.L DO.\_CfxBase BEQ initGLErr

;----- open the intuition library LEA ILName(FC).Al MOVEQ #0.D0 CALLEY OpenLibrary MOVE.L D0.\_IntuitionBase REQ intilErr

pdiRts: MOVE.L (A7)+,A6 RTS MOVEQ #0, D0

\_IntuitionBase,Al CloseLibrary

\_GfxBase,Al CloseLibrary

DOSBase, Al CloseLibrary

#-1,00 pdiRts

'intuition.library' 'dos.library'

'graphics.library' 0

| ო          |
|------------|
| Page       |
| asm.       |
| init       |
| /o_0       |
| diablo     |
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| <b>B</b> C |

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| SECTION printer                             |                             | =                                 | 0.1"                |                |       |               |               | Data                                         |                |         | *************************************** | ; show error for OpenLibrary() |                                                                    |             |      |         |               | ; PrinterClass | ; ColorClass | ; NumCharSets     | : NumRows | ; MaxYDots | ; XOotsInch<br>: YootsInch | Commands     | : tvice normal: slow alpha |
|---------------------------------------------|-----------------------------|-----------------------------------|---------------------|----------------|-------|---------------|---------------|----------------------------------------------|----------------|---------|-----------------------------------------|--------------------------------|--------------------------------------------------------------------|-------------|------|---------|---------------|----------------|--------------|-------------------|-----------|------------|----------------------------|--------------|----------------------------|
| printer                                     | "exec/types.1"              | exec/nodes.1"<br>"exec/strings.1" | "devices/prtbase.i" | 8              | _Init | -Open         | CommandTable  | _PrinterSegmentData<br>_DoSpecial<br>_Render |                | PEDData |                                         | #0,D0                          | VERSION<br>REVISION                                                | nrinterName | Init | Expunge | Open<br>Close | PPC_COLORGEX   | PCC_YMCB     | 8 -1              | 1024      | 0          | 120                        | CommandTable | Lospecial<br>Render<br>60  |
| princercag.asm<br>SECTION<br>Included Files | INCLUDE                     | INCLUDE                           | INCLUDE             | Imported Names | XREF  | XREF<br>YOU'S | XREF          | XREF<br>XREF<br>XREF                         | Exported Names | XOZE    |                                         | MOVEQ                          | 8.3<br>8.3<br>8.3<br>8.3<br>8.3<br>8.3<br>8.3<br>8.3<br>8.3<br>8.3 | 1           | 200  | DC.L    | 112           | DC.B           | 8. E         | 3.3<br>8.3<br>8.3 | 3 E       | 32.2       | 3 S                        | 32           | 388                        |
|                                             |                             | 4 H                               | F                   | 1              | 2     | 2 2 2         | <b>3</b> 23 1 | ***                                          | # E3           | ×       | *************************************** |                                |                                                                    | PEDData:    |      |         |               |                |              |                   |           |            |                            |              |                            |
|                                             |                             |                                   |                     |                |       |               |               |                                              |                |         |                                         |                                |                                                                    |             |      |         |               |                |              |                   |           |            |                            |              |                            |
|                                             |                             |                                   |                     |                |       |               |               |                                              |                |         |                                         |                                |                                                                    |             |      |         |               |                |              |                   |           |            |                            |              |                            |
|                                             |                             |                                   |                     |                |       |               |               |                                              |                |         |                                         |                                |                                                                    |             |      |         |               |                |              |                   |           |            |                            |              |                            |
|                                             |                             |                                   |                     |                |       |               |               |                                              |                |         |                                         |                                |                                                                    |             |      |         |               |                |              |                   |           |            |                            |              |                            |
| ase,Al<br>ry                                | ት<br>ት                      | Ì                                 | <b>.</b>            |                |       |               |               |                                              |                |         |                                         |                                |                                                                    |             |      |         |               |                |              |                   |           |            |                            |              |                            |
| _IntuitionBase,Al<br>CloseLibrary           | _GfxBase,Al<br>CloseLibrary | DOSBase, Al                       |                     | 94             |       |               |               | #0,D0                                        |                |         |                                         |                                |                                                                    |             |      |         |               |                |              |                   |           |            |                            |              |                            |
| Expunge:<br>MOVE.L<br>LINKEXE               | MOVE.L<br>LINKEXE           | MOVE.L                            |                     |                | RTS   |               |               | _Close:<br>MOVEQ #<br>RTS                    | END            |         |                                         |                                |                                                                    |             |      |         |               |                |              |                   |           |            |                            |              |                            |
| a a                                         |                             |                                   |                     | Open:          |       |               |               | ថ្មី                                         |                |         |                                         |                                |                                                                    |             |      |         |               |                |              |                   |           |            |                            |              |                            |

printerName:

```
STRING <'Diablo C-150'>
```

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```
tens= (ROWSIZE-huns*100)/10;
ones= (ROWSIZE-huns*100-tens*10);
ROWSIZE += 7; /* plus 7 cmd bytes */
COLORSIZE+3; /* the size of each color buffer */
BUFSIZE=(COLORSIZE*4+3);

(* buffer size required for DIABLO C-150 */
colors [0] = 7; /* black */
colors [0] = 7; /* black */
colors [2] = COLORSIZE*2+7; /* yallow */
colors [2] = COLORSIZE*3+7; /* magenta */
colors [3] = COLORSIZE*3+7; /* cyan */
RD->pd_PrintBuf = (UBYTE *)
Allochem(BUSIZE*2+7; /* Cyan */
RD->pd_PrintBuf = (UBYTE *)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /* alloc memory for printer buffer (uses double buffering) */
ROWSIZE=(x+7)/8; /* pc/8 pixels per row on the DIABLO C-150 */
huns=ROWSIZE/100;
                                                                                                                                                                                                                                                                                                                                                                                                              /* print status (0-init, 1-enter pixel, 2-dump) */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   static UMCRD COLORSIZE;
static UMCRD BUFSIZE;
static UMCRD colors[4]; /* color ptrs */
static BYTE huns tens, ones; /* used to program buffer size */
/* the color type */
/* the color type to use (0, 1, 2 or 3) */
/* the x & y co-ordinates */
/* or the pc & pr print values, or special */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1f (err=(PD->pd_PrintBuf==0)) return(err);
1f (err=(*(PD->pd_PWrite))("\033\rP",3)) return(err);
/* reset printer to power-up */
                                                                                                                   #include "../printer/prtbase.h"
                                                                                                                                                                      extern struct PrinterData *PD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             static UMORD bufptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            static UMORD ROWSIZE
                                                                                                                                                                                                                  /* for the DIABLO C-150 */
                                                                                              #include <exec/memory.h>
                                                                                                                                                                                                                                                                                          Render(ct, x, y, status)
UBYIE ct;
                          #include <exec/types.h>
#include <exec/nodes.h>
                                                                        #include <exec/lists.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    switch (status)
                                                                                                                                                                                                                                                                                                                                                                                        UBYTE status;
                                                                                                                                                                                                                                                                                                                                      UMORD x, y;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BYTE err;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  case 0 :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           UMORD 1;
```

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ENTO ENT2 ENT3 ENT4 ENT5 ENT6 ENT7 ENT8 ENT9 EXTEND PROP2 PROP1 PROP1 ISS JEY5 JEY7 JEY0 JEY1 VERPO VERP1 SLPP PERF LWS RWS TWS BWS STEM STEM CAM \* proportional on proportional off proportional clear set prop offset auto left justify auto right justify auto full justify auto full justify /\* 1/8" line space
/\* 1/6" line spacing
/\* set form length
/\* perf skip n
/\* perf skip off French char set German char set UK char set Danish I char set Japanese char set Norweign char set Danish II char set normalize partial line up partial line down Sweden char set Italian char set Spanish char set Cir all v tabs Cir all h & v tabs set default tabs Clear all h tabs Clr vertical tab Set vertical tab entended command Right margin set Left margin set Bottom marg set /\* auto center on T&B margin set L&R margin set top margin set Clr horiz tab Clear margins Set horiz tab /\* letter space US char set \*\*\*\*\*\*\*\*\*\*\* ::: "(0335\001",
"(335\377",
"(3317)",
"(3317)",
"(0331\033a\002",
"(0331\033a\003",
"(03377", \033x1\033a\001", "\033R\376"
"\033R\001"
"\033R\002"
"\033R\004"
"\033R\006"
"\033R\006"
"\033R\011"
"\033R\011"
"\033R\011" "\0332", "\033C", "\033N", "\0330", \\ 377'', \\ 377'', \\ 377'', \\ 377'', \\ 377'', "\377"; "\377"; "\377"; "\377"; "\377"; "\377"; "\377" ä aris, aind, anel,
ascri, ascri, ascri, ascri, ascri, ascri,
ascri, ascri, ascri,
astrorpi, astrorpi, astrorpi, astrorpi, astrorpi, astrorpi,
adeni, adeni, adeni,
adeni, adeni, asusa, asusi,
asusi, asusi, asusa, asusi,
afini, asini, apere, apere, SHORP4 SHORP3 SHORP6 SHORP5 SHORPO SHORP2 SHORP1 DENS DEN4 DEN3 DEN2 DEN1 SCRO boldface on S
boldface off S
set foreground color S
set background color S 6 shadow print on shadow print off doublestrike on doublestrike off /\* elite on
/\* elite off
/\* condensed (fine) c
/\* condensed off
/\* enlarged on
/\* enlarged off \* superscript on \* superscript off \* subscript on \* subscript off /\* normal char set /\* italics on
/\* italics off
/\* underline on
/\* underline of
/\* boldface of
/\* boldface of
/\* set foreground
/\* set background /\* normal pitch /\* 1f /\* return, 1f /\* reverse 1f Epson X-80 functions implemented: initialize /\* shadow pr /\* shadow pr /\* doublestr /\* NLQ on /\* NLQ of data.c for epson X80 series \*/ /\* reset /\* initia "\0335", "\0334", "\0334", "\0335", "\033-\0011", "\033-\00138", "\0338", "\0338", "\0338", "\0338", "\0338", "\0337", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", "\0377", " "\033P\022\033M\376",
"\033P",
"\017",
"\032",
"\033M\001",
"\033M\376", \*CommandTable[] ={ "\377", "\337", "\033G", "\033H", "\033X\001", "\033S\376", "\033T", "\033S\001", "\033T", "\033@", "\377", "\012", "\015\012", "\377",

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| *******Init asm for epson X-80 series********************************** | SECTION printer | * Included Files | INCLUDE "exec/types.1" INCLUDE "exec/lists.1" INCLUDE "exec/lists.1" INCLUDE "exec/lists.1" INCLUDE "exec/memory.1" INCLUDE "exec/ports.1" INCLUDE "exec/ports.1" | INCLUDE "devices/macros.i" | * Imported Functions | XREF_EXE CloseLibrary XREF_EXE OpenLibrary XREF | XREFPEDData | f Exported Globals | XDEFInit XDEFCopen XDEFOpen XDEFClose XDEFPD XDEFPED XDEFSysBase XDEFCfxBase | SECTION printer, DATA  PD DC.L 0  SED DC.L 0  Sysbase DC.L 0  GfxBase DC.L 0 | SECTION printer, CODE | LINIC: MOVE.L 4(A7), PD LEA PEDData (PC), A0 MOVE.L A0, PED MOVE.L A6, -(A7) MOVE.L AbsExocBase, A6 MOVE.L Abs.ExocBase, A6 |
|-------------------------------------------------------------------------|-----------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------|-------------------------------------------------|-------------|--------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------|
| •                                                                       |                 | •                |                                                                                                                                                                   |                            | •                    |                                                 |             |                    |                                                                              | PD PED Syssan                                                                |                       |                                                                                                                             |

;----- open the graphics library

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| Page   |
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| **************************************                                     | SECTION printer | * Included Files       |                   | INCLUDE "devices/prtbase.i" * Imported Names | XREF                                     | * Exported NamesXDEF |
|----------------------------------------------------------------------------|-----------------|------------------------|-------------------|----------------------------------------------|------------------------------------------|----------------------|
| LLEA GLName (PC), Al<br>MOVEQ #0, DO<br>MOVE L DO, GERBASO<br>BEQ InitGLET | #0,D0           | MOVE.L (A7)+,A6<br>RTS | #-1, D0<br>pdlRts | 'graphics.library'<br>0<br>0                 | MOVE.LGfxBase,Al<br>LINKEXE CloseLibrary | MOVEQ #0, D0<br>RTS  |

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| •            |                                              | sor ios or iosch ios                                              |                              |
|--------------|----------------------------------------------|-------------------------------------------------------------------|------------------------------|
| Ω,           | rinter device                                | printer device dependent code tag                                 |                              |
| *******      | ************                                 |                                                                   |                              |
| Ø            | SECTION                                      | printer                                                           |                              |
| I            | Included Files                               |                                                                   |                              |
| ннн          | INCLUDE<br>INCLUDE<br>INCLUDE                | "exec/types.1" "exec/nodes.1" "exec/strings.1"                    |                              |
| I            | INCLUDE                                      | "devices/prtbase.1"                                               |                              |
| ī            | Imported Names                               |                                                                   |                              |
| ******       | KREF<br>KREF<br>KREF<br>KREF<br>KREF<br>KREF | Init Expunge Open Close CommandTable PrinterSegmentData DoSpecial |                              |
| й<br>        | Exported Names                               |                                                                   |                              |
| ×            | XDEF                                         | PEDData                                                           |                              |
| ***          | *****                                        | ************                                                      | ************************     |
|              | MOVEQ                                        | #0,D0 ; sho                                                       | show error for OpenLibrary() |
|              |                                              |                                                                   | VERSION                      |
| PEDData:     | ¥ 5                                          | , v interMome                                                     | WITCH TOTAL                  |
|              | 388                                          | Princername<br>_Init<br>Expunda                                   |                              |
|              | 28                                           | Open                                                              |                              |
|              | 22.5                                         |                                                                   | PrinterClass                 |
|              | 388                                          | • • • •                                                           | MaxColumns<br>MaxColumns     |
|              | 8 M.                                         |                                                                   | NumRows                      |
|              | 2.2                                          |                                                                   | MaxXDots<br>MaxXDots         |
| <del>-</del> | 3.3.<br>3.3.                                 | ••••                                                              | MotsInch<br>YotsInch         |
|              | EC.L                                         | _CommandTable ; Com<br>_DoSpecial                                 | Commands                     |

```
DC.L Render
DC.L 30
printerName:
STRING <'Epson'>
END
```

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```
AllocMem(BUESIZE'2, MEME_PUBLIC); /* alloc public mem */
if (err=(PD->pd_PrintBuf == 0)) return(err);
/* reset printer to power-up state */
if (err=(*(PD->pd_Pwrite)) ("\0330",2)) return(err);
if (err=(*(PD->pd_Pwrite)) ("\0331",2)) return(err);
if (err=(*(PD->pd_Pwrite)) ("\0331",2)) return(err);
/* select 7/72 inch spacing */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /* put plxel in buffer */
i = bufptr+x+4; /* calc which byte to use */
PD->pd_PrintBuf[i] = PD->pd_PrintBuf[i] | (1 << (7-(y67)));
/* fill print buffer */
return(0); /* flag all ok */</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /* alloc memory for printer buffer */
ROWSIZE=x; /* row size required for EPSON */
BUFSIZE=(6-ROWSIZE); /* buffer size required for EPSON */
PD->pd_PrintBuf = (UBYIE *)
UMORD x, y; /* the x & y co-ordinates */
/* or the pc & pr print values, or special */
UBYTE status; /* print status (0-init, 1-enter pixel, 2-dump) */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* mics. var */
/* the error # */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              return(0); /* flag all ok */
                                                                                                                                                                 int Render(ct, x, y, status)

UNITE ct; /* null for b/w printers */

UNORD x, y; /* the v f ...
                                                                                                     "devices/prtbase.h"
                                                                                                                                            extern struct PrinterData *PD;
                                                                                                                                                                                                                                                                                                                     static UNORD ROWSIZE;
static UNORD BUFSIZE;
                                                                                                                                                                                                                                                                                                                                                       static UMORD bufptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           bufptr=0
                                                                                                                                                                                                                                                                                                                                                                                                                                         switch (status)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             break;
                                                                                                                                                                                                                                                                                                                                                                                                     BYTE err;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           case 1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Case 0 :
          render
                                                                                                                                                                                                                                                                                                                                                                                UNDRD 1;
       *********
                                              #include #include
                            #include
                                                                                   #Include
                                                                                                       #1nclude
```

```
PD->pd_PrintBuf[bufptr] = 27;
PD->pd_PrintBuf[bufptr+1] = 'L';
PD->pd_PrintBuf[bufptr+2] = ROWSIZE & Oxff;
PD->pd_PrintBuf[bufptr+3] = ROWSIZE >> 8;
PD->pd_PrintBuf[bufptr+BUFSIZE-2] = 10;
PD->pd_PrintBuf[bufptr+BUFSIZE-2] = 11;
PD->pd_PrintBuf[bufptr+BUFSIZE-1] = 13;
return(0); /* flag all ok */
break;

case 4: /* free the print buffer memory */
err=(*[PD->pd_PWite))("\0.33@",2);
/* reset printer to power-up state */
if (lerr) err=(*[PD->pd_PBothReady))();
/* wait for both buffers to empty */
FreeMem(PD->pd_PrintBuf, BUFSIZE*2);
/* free print buffer's memory */
break;
```

return(0);

default:

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2

```
/***** printer.device/printers/HP_LaserJet_Plus_special_functions ******
                                                                                                                                                                                                                                                         static char initThisPrinter[]="\033&d@\033&i6D\033(sb10hpsitui2v";
static char initMarg[]="\033&a0001000M";
static char initTMarg[]="\033&1000e000F";
static char initForm[]="\033&1002e000F";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      j=x; /* set the formlength=textlength, top margin of 2 */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             }
if((PD->pd_Preferences.PrintSpacing)==EIGHT_LPI)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DoSpecial (command, output Buffer, vline, currentVMI, crlfflag, Parms) char output Buffer [];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                outputBuffer[x]=initThisPrinter[x];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if((PD->pd_Preferences.PrintPitch) ==ELITE)
outputBuffer[14]='2';
outputBuffer[18]='2';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       if((PD->pd_Preferences.PrintPitch)==FINE)
    outputBuffer[14]='5';
                                                                                                            HP LaserJet 2686A special functions implemented:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /* wrong again */
outputBuffer[7]='8';
                                                                                                                                                     aRIN,
aSUS0, aSUS1, aSUS2, aSUS3, aSUS4
                                                                                                                                                                                                aPLD, aVERPO, aVERP1
     /* hp special printer functions */
                                                                                                                                                                                                                                                                                                       "exec/types.h"
                                                                                                                                                                                                                                                                                                                                                                                           extern struct PrinterData *PD;
                                                                                                                                                                                                                                                                                                                         #include "devices/printer.h"
#include "devices/prtbase.h"
                                                                                                                                                                                                                    aSLPP, aSLRM, aSTBM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             while (x<24) {
                                                                                                                                                                                                                                                                                                                                                                                                              UMORD textlength, topmargin;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         if (*command==aRIN)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BYTE *currentVMI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Int y=0;
Int j=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    UWORD *command;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BYTE *crlfflag;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     UBYTE Parms [];
                                                                                                                                                                                                  aPLU.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         *vline;
                                                                                         Ž
                                                                                                                                                                                                                                                                                                         #1nclude
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PED->ped_XDotsInch = PED->ped_YDotsInch = 100;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PED->ped_MaxYDots = 1590;
PED->ped_XDotsInch = PED->ped_YDotsInch = 150;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PED->ped_XDotsInch = PED->ped_YDotsInch = 300;
                                                                                                                                                                                                                                                                                                                       PED->ped_MaxMots = 600;
PED->ped_MaxMots = 795;
PED->ped_MotsInch = PED->ped_MotsInch = 75;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PED->ped_Max/Dots = 2400;
PED->ped_Max/Dots = 3180;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PED->ped_MaxXDots = 1200;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PED->ped_MaxXDots = 800;
PED->ped_MaxYDots = 1060
                                                                                                                                                 extern struct PrinterExtendedData *PED;
                                                                                                                                                                                                                                                                                                                                                                                   density[3] = '0';
density[4] = '7';
density[5] = '5';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              density[3] = '1';
density[4] = '0';
density[5] = '0';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         density[3] = '1';
density[4] = '5';
density[5] = '0';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   density[3] = '3';
density[4] = '0';
density[5] = '0';
                                                                                                                                                                                                                                                                            switch (level) {
  case SPECIAL_DENSITY1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SPECIAL DENSITY4:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SPECIAL DENSITY2:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SPECIAL DENSITY3:
                                                              #include <exec/types.h>
#include "devices/prtbase.h"
#include "devices/printer.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            density [5]
                                                                                                                                                                       extern char density[];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  break;
/*
***** density.c *****
                                                                                                                                                                                                                                                                                                                                                                                                                                                     break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  break;
                                                                                                                                                                                                                SetDensity(level)
UMORD level;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             default:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Case
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Cabo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Case
```

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| 4                  |
|--------------------|
| Page               |
| hpplus/dospecial.c |
| 1985               |
| 11:40              |
| Dec 4              |

```
Param=200;

else if [Param>99) {
    outputBuffer[x++]='1';
    Param=100;
}
else outputBuffer[x++]='0'; /* always return 3 digits */
if (Param>9) outputBuffer[x++]='0';
else outputBuffer[x++]='0';
outputBuffer[x++]=Param#10+'0';
}

Close()
{
    /* (* [PD->pd_PM*ite)) ("\033E", 2);*/
    (* [PD->pd_PM*ite)) ("\014", 1);
    /* (* [PD->pd_PM*ite)) ("\014", 1);
    /* (* [PD->pd_PM*ite)) ("\014", 1);
    /* (* [PD->pd_PM*ite)) ("\014", 1);
}
```

"exec/types.1"
"exec/nodes.1"
"exec/lists.1"
"exec/memory.1"
"exec/ports.1"
"exec/libraries.1" "devices/macros.1" Dec 4 11:26 1985 hpplus/init.asm Page 1 Init
Expunse
Open
PED
PED
Systamse
DOSBase
CfxBase CloseLibrary OpenLibrary AbsExecBase \*----- Imported Functions ------PEDData \*----- Exported Globals -----\*----- Included Files XREF\_EXE XREF\_EXE XREF INCLUDE INCLUDE INCLUDE INCLUDE INCLUDE INCLUDE SECTION INCLUDE XOEF XOEF XOEF XOEF XOEF XOEF XREF

MOVE.L A6,\_SysBase

:----- open the dos library
LEA DIName (PC), Al
MOYEQ #0, D0
CALLEXE OpenLibrary
MOYE. D0, D0SBase
BEQ initDLErr

;----- open the graphics library LEA GLName (PC) .Al MOVEQ #0.00 CALLEXE OpenLibrary MOVE.L D0..GfxBase BEQ initGLErr

;----- open the intuition library LEA ILName (PC), Al HOVEQ #0, DO

OpenLibrary DO,\_IntuitionBase initILErr LEA MOVEQ CALLEXE MOVE.L BEQ

(A7) +, A6 #0,D0 MOVE.L RTS MOVEQ

MOVE.L IntuitionBase, Al LINKEXE CloseLibrary

InitPAErr:

MOVE.L \_GfxBase,Al LINKEXE CloseLibrary InitilErr:

initGLErr:

MOVE.L DOSBase, Al LINKEXE CloseLibrary

#-1,D0 pdiRts MOVEQ BRA.S InitDLErr:

ILName:

DL.Name:

'intuition.library' 8.8 8.8

dos.llbrary'

'graphics.library' 8.8 8.9

CLName:

DC.B DS.B DS.¥

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Expunge:

MOVE.L IntuitionBase, Al LINKEXE CloseLibrary

MOVE.L \_GfxBase,Al LINKEXE CloseLibrary

MOVE.L DOSBase, A1 LINKEXE CloseLibrary

-Open:

#0,D0 MOVEQ RTS

- I-18 -

\*\*\*\* printertag.asm for hpplus \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

printer

SECTION

\*----- Included Files

"exec/types.1"
"exec/nodes.1"
"exec/strings.1" INCLUDE INCLUDE INCLUDE

"devices/prtbase.i" INCLUDE

Imported Names

Expunde

XREE XREE XREE XREE XREE XREE

\_Close \_CommandTable \_PrinterSegmentData \_DoSpecial \_Render

Exported Names

- I-19 -

PEDData **DEF** 

MOVEQ RTS DC.W DC.W

#0,D0

; show error for OpenLibrary()

PEDData:

Expunge

printerName

VERSION REVISION

; PrinterClass
; ColorClass
; MaxColumns
; NumCharSets

Numbows

MaxYDots XDotsInch YDotsInch 

\_CommandTable \_DoSpecial \_Render 30

; Commands

•

printerName:

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STRING <'HP LaserJet Plus'>

1f (err=(\*(PD->pd\_PWrite)) ("\033\*r0A",5)) return(err);
/\* start raster gfx \*/
bufptr=0; /\* init to first buffer \*/

if (err=(PD->pd\_PrintBuf == 0)) return(err);
if (err=(\*(PD->pd\_PM\*ite))("\033E",2)) return(err);
if (err=PM\*it(1,0)) return(err);
if (err=(\*(PD->pd\_PM\*ite)) (density,7)) return(err);
if (err=(\*(PD->pd\_PM\*ite)) (density,7)) return(err);

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8

```
case 2 : /* dump buffer to printer */
if (err=(*(PD->pd_PM*ite)) (&(PD->pd_PrintBuf[bufptr]), BUESIZE))
return(err);
bufptr=BUESIZE-bufptr; /* switch to other buffer */
return(0); /* flag all ok */
                                                                                                                                                                                                                                                                                                          for (l=bufptr; 1<BUESIZE+bufptr; 1++)

PD-pd_PrintBuf[1] = 0; /* clear buffer */
PD-pd_PrintBuf[bufptr] = 27;

PD-pd_PrintBuf[bufptr+1] = '*';

PD-pd_PrintBuf[bufptr+2] = '*';
                                                                                                                                                                                                                                                                                                                                                                                                             4] = tens + '0';

5] = ones + '0';

| = 'W';
                                                                                                                                                                                                                                                                                                                                                                                                                   PD-yed PrintBuf [bufptr+3] = huns +
PD-yed PrintBuf [bufptr+4] = tens +
PD-yed PrintBuf [bufptr+5] = ones +
PD-yed PrintBuf [bufptr+6] = 'W';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            case 4:/* free the print buffer memory */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     return(0); /* flag all ok */
                                                                                                                                                                                                                                                                                          case 3 : /* clear and init buffer */
                                                                                             break;
                                                                                                                                                                                                                                                  break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        iprintf("hp render(%ld, %ld, %ld, %ld);\n", ct, x, y, status);
                                                                                                                                                                                                                                                                                                                                                                                                                               4-end) */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        static UMCRD bufptr;
/* used for double buffering; points to buffer 1 or 2 */
           /* mics. var */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   static BYTE huns, tens, ones; /* used to program buffer size */
                                                                                                                                                                                                                                                                                                                                        /* null for b/w printers */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /* the error # 1/
                                                                                                                                                                                                                                                                                                                                                                                                                                 /* print status (0-init, 1-enter pixel, 2-dump, 3-close,
                                                                                                                                                                                                                                                                                                                                                                 /* the x & y co-ordinates ^{*}/ /* or the pc & pr print values, or special ^{*}/
                                                                                                                                                                                                                extern struct PrinterExtendedData *PED;
                                                                                                                                                                                                                                        extern SetDensity();
char density[8] = "\033*t100R"
                                                                                                                                                                                            extern struct PrinterData *PD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               static UNORD ROWSIZE;
                                                                                                                           #include "devices/prtbase.h"
#include "devices/printer.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 static UMORD BUFSIZE
                                                                                                                                                                                                                                                                                                                        int Render (ct, x, y, status)
                                                                                                         #include <exec/memory.h>
                                       finclude <exec/types.h>
                                                                                   #include <exec/lists.h>
                                                                                                                                                                                                                                                                                                    /* for the HP+ 2686A */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       switch (status)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BYTE err;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      UNCRD 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DEBUC
                                                                                                                                                                                                                                                                                                                                                                                                               UBYTE status;
                                                                                                                                                                                                                                                                                                                                                                     UNORD x, y;
                                                                                                                                                                                                                                                                                                                                                  UBYTE at;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        #1fdef
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    end1f
```

```
olse SetDensity(x & SPECIAL_DENSITYMASK);/* else use SPECIAL*/
                                                                                                                                                                                                                                                                            if ((x & SPECIAL_DENSITYMASK) == 0) { /* if use prefs */
   if (PD->pd_Preferences.PrintQuality == DRAET)
        SetDensity(SPECIAL_DENSITY2); /* 100 dp1 */
   else SetDensity(SPECIAL_DENSITY3); /* 150 dp1 */
/* end raster graphics, unload paper, and reset printer */
err=(*(PD->pd_PWrite))("\(033*rB\(014\(033E",7);\)
if (lerr) err=(*(PD->pd_PBothReady))();
/* wait for both buffers to be clear */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FreeMem(PD->pd_PrintBuf, BUFSIZE*2);
   /* free the print buffers memory */
return(err); /* return status */
break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            return(0);
break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    return(0);
break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             default :
                                                                                                                                                                                                                                                               case 5:
```

AllocMem(BÜESIZE\*2, MEME\_PUBLIC); /\* alloc public mem \*/

ones=(ROWSIZE-huns\*100-tens\*10);
BUFSIZE=(ROWSIZE-T); /\* buffer size required for HP \*/
PD->pd\_PrintBuf = (UBYIE \*)

tens=(ROMSIZE-huns\*100)/10;

/\* alloc memory for printer buffer (uses double buffering) ROWSIZE=(x+7)/8; /\* row size required for HP \*/ huns=ROWSIZE/100;

case 0 :

```
ESC[Pn1;Pn2r */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ESC[Ph1;Ph2r */
ESC[Ph1;Ph2s */
                                                                                                                                                                                                                                                                                                                                                                                                                                                      ESC[Pn1;Pn2s */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ESC4g */
                                                                                                                                                                                                                                                                                                                                                                                                    ESC[Put */
                   ESCL */
ESCK */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  \033D\010\020\030\040\050\060\070\100\110\120\376"
                                                         ESC(R */
ESC(K */
ESC(K */
ESC(A */
ESC E */
ESC E */
                                                                                                                                                                                                                                                                                                                                     E
                                                                                                                                                                                                                                                                                                                                                                                                                                                      DECSLRM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DECSTBM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /* Set horiz tab HTS
/* Set vertical tab VTS
/* Clr horiz tab TBC 0
/* Clear all h tabs TBC 3
/* Clr vertical tab TBC 1
                                                                                                                                                                            ENT 9 4/
                                                                                                                                                                                                                /*proportional on */
/*proportional off*/
/*proportional clear*/
/*set prop offset TSS */
/*auto left justify JFY 5 */
/*auto right justify JFY 7 */
/*auto full justify JFY 3,6 */
/*auto justify off JFY 0 */
/*place holder */
    /* normalize */
/* partial line up PLU
/* partial line down PLD
                                                                                                                                                                                                                                                                                                                                   JEY 2,6 1/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SLRM
                                                                                                                                    ENT 6 */
ENT 7 */
ENT 8 */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /* Clr all h & v tabs */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         " Clr all v tabs
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             extended command */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bottom marg set */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Right margin set
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Clear margins */
                                                                                                                                                                                                                                                                                                                                                                                                                                                     /* Left margin set
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       T&B margin set
L&R margin set
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Top margin set
                                                                                                                                                                          /*Norwelgen char set
/*Danish II char set*/
                                                                                              /*UK char set
/*Danish I char set
                                                                                                                                                                /*Japanese char set
                                                                                                                                    /*Italian char set
/*Spanish char set
                                                                     /*French char set
/*German char set
                                                                                                                       "Sweden char set
                                                                                                                                                                                                                                                                                                                                   /*auto center on
                                                         /*US char set
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           * set default tabs */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "\377",
"\377",
"\033D\376",
"\3377",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "\033D\376",
"\377",
   "\033T",
"\377",
"\377",
                                                                                                                                                                                                                                                                                                        \377".
\377".
\377".
                                                                                                                                                                                                                                                                                                                                                                                                                                                               377.
377.
377.
377.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ፝
                                                                                                                                                                                                                   /***** printer.device/printers/Okimate_20_functions ****************
                                                                                       aRIS, aIND, aNEL, aSCRO, aSCR23, aSCR24, aSCR24
aSHORPO, aSHORP1, aSHORP2, aSHORP3, aSHORP4, aSHORP5, aSHORP6
aDEN1, aDEN2, aSUS0, aSUS1, aSUS2, aSUS3, aSUS4,
aVERP0, aVERP1, aSLPP, aPERF, aPERF0
                                                                                                                                                      special functions implemented:
aRIN, ,aRI, aSUSO, aSUSI, aSUS2, aSUS3, aSUS4, aPLD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DECSHORP ESC[2w */
DECSHORP ESC[1w */
GSM (special) */
                                                                                                                                                                                                                                                                 ESCE */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ESCL */
(special) */
ESCK */
(special) */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (special) */
(special) */
                                                                                                                                                                                                                                                                                                                                       set SCR 0 ESC[0m */
/*italics on SCR 3
/*italics off SCR 23
/*underline on SCR 4
/*underline of SCR 24
/*boldface on SCR 1
/*boldface off SCR 24
/*set foreground color */
/* set background color */
                                                                                                                                                                                                                                                                                                                                                        SGR 23
SGR 24
SGR 24
SGR 1 4
SGR 1 1
                                                                                                                                                                                                                                                                           IND
NEL
RI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      2222
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DECSHORP ESC(0w */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /*shadow print on*/
/*shadow print off*/
/*doublestrike on*/
/*doublestrike off*/
/* NLQ on*/
/* NLQ on*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /*superscript on
/*superscript off
/*subscript on
/*subscript of
                                                              Okimate 20 functions implemented:
                                                                                                                                                                                                                                                            /*initialize
/* if
/* return, if
/* reverse if
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /*enlarged on
/*enlarged off
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /*elite on
/*elite off
/* fine on
/* fine off
                                                                                                                                                                                                                                                                                                                            "\033%H\033-\376",
                                                                                                                                                                                                                                                                                                                                         /*normal char set
"\033;C", /*1!
"\033;H", /*1!
"\033-\001", /*w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /*normal spacing
"\022\0334\376",
"\033:", /*e
/* okimate 20 commands */
                                                                                                                                                                                                                                                                                      "\015\012",
"\377",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "\377",
"\377",
"\377",
"\331\002",
"\0331\001",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "\022",
"\0334\001",
"\0334\376",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "\033S\376",
"\033T",
"\033S\001",
"\033T",
                                                                                                                                                                                                                                                             "\377".
"\012".
                                                                                                                                                                                                                                                                                                                                                                                                                     \377".
\377".
                                                                                                                                                                                                                         char
```

```
1f(*command==aVERP0) *currentWd=27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1f(*command==aVERP1) *currentVMI=36;
                                                                                                                                                                                    f((*vline)<0) {
    (*vline) = 0;
    *command=aSUS3;
    return(0);</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             f((*vline)>0) {
    (*vline) = 0;
    *command=aSUS1;
    return(0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1f(*command=aSUS0) *vlIne=0;
1f(*command=aSUS1) *vlIne=0;
1f(*command=aSUS2) *vlIne=1;
1f(*command=aSUS3) *vlIne=0;
1f(*command=aSUS4) *vlIne=0;
                                                                                                                                   *command=aSUS2;
return(0);
                                                                                                                                                                                                                                                                                                                                                                                                                          *command=aSUS4;
return(0);
                                                                                                                                                                                                                                                                                                                                                                                                      *vline)=(-1)
                                                                     1f(*command=aPLU) {
    1f((*vline)==0) {
         (*vline)=1;
                                                                                                                                                                                                                                                                                                                                                          if(*command=aPLD) {
   if((*vline)=0){
                                                                                                                                                                                                                                                                                                return(-1);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          return (-1);
         return(x);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              return (0);
                                                                                                                                   /***** printer.device/printers/Okimate_20_special_functions ********
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                *current/WI=27: /* assume 1/8 line spacing */
if((PD->pd_Preferences.PrintSpacing)==SIX_LPI) {
   /* wrong again */
                                                                                                                                                                                                                                                                                                DoSpecial (command, outputBuffer, vline, currentWH, crlfflag, Parms)
char outputBuffer[];
UMCRD *command;
BYIE *vline;
BYIE *currentVH];
BYIE *currentVH];
BYIE *currentVH];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           }
else 1f((PD->pd_Preferences.PrintPitch)=FINE)
outputBuffer[x++]='\017';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1f((PD->pd_Preferences.PrintQuality)=LETTER)
outputBuffer[2]= '\002';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1f((PD->pd_Preferences.PrintPitch)=ELITE) {
    outputBuffer[x++]='\033';
    outputBuffer[x++]=':';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  static char initThisPrinter[]=
"\0331\001\022\0330\033$\033-\376\r\033M";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   outputBuffer[x]=initThisPrinter[x];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            outputBuffer [x++]='\033';
outputBuffer [x++]='A';
outputBuffer [x++]='\014';
outputBuffer [x++]='\033';
outputBuffer [x++]='\033';
*currentVMI=36;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 outputBuffer[11]='\000';
outputBuffer[x++]='\000';
                                                                                                                                                                                                                                            extern struct PrinterData *PD;
extern struct PrinterExtendedData *PED;
/* okimate 20 special commands */
                                                                                                       Okimate 20 special functions
                                                                                                                                                               #include "exec/types.h"
#include "devices/printer.h"
#include "devices/prtbase.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      while (x<15) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1f(*command==aRIN)
{
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Int x=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                               9 ↓
- I-22 -
```

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|                                        | LEA PEDData (PC) . Ao MOVE. I. Ao . PED MOVE. I. Ao (A7) |                  | <b>E</b>                                                                                       |                                           | MOVEQ #0,D0<br>CALLEXE OpenLibrary<br>MOVE.L D0,_GfxBase<br>BEQ initGLErr | open the intuition library LEA ILName(PC),Al MOVEQ #0,D0 CALLEXE OpenLibrary MOVE.L D0, IntuitionBase BEQ initILErr | MOVEQ #0,D0 pdiRts:     |                                           | initILErr: MOVE.L _GfxBase,Al LINKEXE CloseLibrary | initGLErr: MOVE.L DOSBase,Al LINKEXE CloseLibrary | initDLErr: MOVEQ #-1, Do<br>BRA.S pdiRts         | ILName: DC.B 'Intuition.library' |                                        |
|----------------------------------------|----------------------------------------------------------|------------------|------------------------------------------------------------------------------------------------|-------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------|----------------------------------------------------|---------------------------------------------------|--------------------------------------------------|----------------------------------|----------------------------------------|
| ###################################### | printer                                                  |                  | "exec/types.1" "exec/nodes.1" "exec/notes.1" "exec/memory.1" "exec/ports.1" "exec/libraries.1" | "devices/macros.1"<br>"devices/prtbase.1" |                                                                           | _RenderBW<br>_RenderColor                                                                                           | Init                    | _Expunge<br>_Open<br>_Close<br>_PD<br>_PD | _bysbase<br>_CfxBase<br>_IntuitionBase             | sessessessessessessessessessessessesses           |                                                  |                                  | ************************************** |
| ************************************** | SECTION                                                  | * Included Files | INCLUDE<br>INCLUDE<br>INCLUDE<br>INCLUDE<br>INCLUDE                                            | INCLUDE "de INCLUDE "de "de               |                                                                           | . I–23 –                                                                                                            | * Exported Globals XDEF |                                           | XOEF<br>XOEF<br>XOEF                               | SECTION printer.                                  | PED DC.L SyrsBase DC.L DCSBase DC.L GfxBase DC.L | _IntuitionBase DC.L              | SECTION                                |

| #*******printertag.asm for okimate20************************************ | 0<br>0 SECTION printer | * Included Files | INCLUDE "exec/types.1" INCLUDE "exec/nodes.1" CloseLibrary INCLUDE "exec/strings.1" | MOVE.L _GfxBase,Al | * Imported Names<br>XREF | XREFClose  PD, A0 #SHADE_COLOR, pd_Preferences +pf_PrintShade (A0) XREFDoSpecial PrinterSegmentData XREFDoSpecial | rted Names - | XDEFFEDUata     | #0,D0 ; show error for OpenLibrary() RIS DC.W VERSION DC.W REVISION | #0, D0  DC.LInit |
|--------------------------------------------------------------------------|------------------------|------------------|-------------------------------------------------------------------------------------|--------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------|--------------|-----------------|---------------------------------------------------------------------|------------------|
|                                                                          | 28.18<br>28.18         |                  | MOVE.L                                                                              | REXE               | MOVE.L<br>LINKEXE C      | MOVE.L<br>CMPI.W #<br>BEQ.S                                                                                       |              | LEA<br>MOVE.L 7 | MOVEQ #                                                             | MOVEQ<br>END     |

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**D** 

```
colors[0] = 0;
colors[1] = 7;
colors[2] = 9+rowsize+7;
colors[3] = (9+rowsize) *2+7;
PD->pd_Printbuf = (UBYTE *)
Allochem(bufsize*2, MEME_PUBLIC); /* alloc public mem */
if (err=(PD->pd_PrintBuf == 0)) return(err);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .4 case 2 : /* dump buffer to printer */
1f (err=(*(PD->pd_PMrite)) (&(PD->pd_PrintBuf[bufptr]),bufsize))
return(err);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          rowsize=(x*3);
/* pc pixels per row x 3 colors on the OKIMATE 20 */
bufsize=(rowsize*3+31);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 : /* put plxel in buffer */
i = bufptr+(y % 24)/8 + x*3 + colors[ct];
   /* calc which byte to use */
PD->pd_PrintBuf[i] = FD->pd_PrintBuf[i] | (1 << (7-(y&7)));
   /* fill print buffer */
return(0); /* flag all ok */</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                  UMORD x, y; /* the x & y co-ordinates */
/* or the pc & pr print values, or special */
UBYIE status; /* print status (0-init, 1-enter pixel, 2-dump, 3-end) */
                                                                                                                                                                                                                                                                                                                                                                                         s) /* passed a color type */
/* the color type to use (0, 1, or 2) */
** buffer size required for OKIMATE 20 */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /*alloc memory for printer buffer */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /* set line spacing to 24 printer lines (24/144 -> 36/216 inch) */ return((*(PD->pd_PWrite))("\0333\044", 3)); /* thats Esc3<36> */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* mics. var */
/* the error # */
                                                                                                                                                                                                                         static UMORD rowsize;
static UMORD bufsize;
static UMORD bufptr;
static UMORD colors[4]; /* color ptrs */
                                                                                                                                                                                                                                                                                                                                                         /* for the OKIMATE 20 (Color) */
int RenderColor(ct, x, y, status)
                                                                                                                                                                                  extern struct PrinterData *PD;
                                                    #include <exec/nodes.h>
#include <exec/lists.h>
#include <exec/memory.h>
#include "devices/prtbase.h"
                             #include <exec/types.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              switch (status)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BYTE err;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Case 0 :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       UMORD 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   case 1
                                                                                                                                                                                                                                                                                                                                                                                                              UBYTE ct;
```

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2

```
/* pc pixels per row x 3 blocks on the OKIMATE 20 bw */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AllocMem(bufsize*2, MEME_PUBLIC); /* alloc public mem */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      err=(*(PD->pd_PBothReady))():
    /* wait for both buffers to empty */
FreeMem(PD->pd_PrintBuf, bufsize*2): /* free printers memory */
return(err): /* return status */
                                                                                                                                                                                                                                                                                                                                                                                                         PD->pd_PrintBuf[1+bufptr+(ct+1)*(rowsize+9)] = 13;
/* advance color */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             for (ct=0; ct<3; ct++) {
    PD->pd_PrintBuf[2+bufptr+ct*(rowsize+9)] = 27;
    PD->pd_PrintBuf[3+bufptr+ct*(rowsize+9)] = 'X';
    PD->pd_PrintBuf[4+bufptr+ct*(rowsize+9)] = 'X';
    PD->pd_PrintBuf[4+bufptr+ct*(rowsize+9)] = '0';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* align ribbon */
                                                                                                                                                                                                                                                                                                                                                                         PD->pd_PrintBuf[6+bufptr+ct*(rowsize+9)] = (rowsize/3) >> 8; /* set # of dots */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ** to **
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* buffer size required for OKIMATE 20 bw */
PD->pd_PrintBuf = (UBYIE *)
                                                                                                                                                                                                                                                                                                  /* enter 24-dot mode */
PD->pd_PrintBuf[S+bufptr+ct*(rowsize+9)] =
(rowsize/3) & 0xff;
                                                                                                             /*alloc memory for printer buffer */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /* for the OKIMATE 20 (b/w) */
int RenderBW(ct, x, y, status) /* passed a color type */
UBYTE ct;
/* not used with b/w printers */
UNORD x, y; /* the x & y co-ordinates */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          = 10;
= 13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           case 4 : /* free the print buffer memory */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PD->pd_PrintBuf[bufptr+bufsize-2]
PD->pd_PrintBuf[bufptr+bufsize-1]
          return(0); /* flag all ok */
break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   return(0); /* flag all ok */
                                                                                         /* clear and init buffer */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /* mics. var */
/* the error # */
bufptr=bufsize-bufptr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              bufsize=(rowsize+7);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 rowsize=(x#3)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               switch (status)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BYTE err;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           case 0 :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            UMORD 1;
                                                                                              case 3
```

```
/* put pixel in buffer */
i = bufptr + (y % 24)/8 + x*3 + 5; /* calc which byte to use */
PD->pd_PrintBuf[i] = PD->pd_PrintBuf[i] | (1 << (7-(y&7)));
                                                                                                                                                                                                                                                                                                                                                                                                                                                  case 2 : /* dump buffer to printer */
1f (err=(*(PD->pd_PWrite)) (&(PD->pd_PrintBuf[bufptr]),bufsize))
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               for (l=bufptr; icbufptr+bufsize; i++)
PD->pd_PrintBuf[i] = 0; /* clear buffer */
PD->pd_PrintBuf[bufptr+] = 27;
PD->pd_PrintBuf[bufptr+] = "%";
PD->pd_PrintBuf[bufptr+2] = "%";
PD->pd_PrintBuf[bufptr+3] = "0"; /* enter 24-dot mode */
PD->pd_PrintBuf[bufptr+3] = (rowsize/3) & 0xff;
PD->pd_PrintBuf[bufptr+4] = (rowsize/3) >> 8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                       return(err);
bufptr = bufsize - bufptr; /* swith to other buffer */
return(0); /* flag all ok */
break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        };
b;
*;
if (err=(PD->pd_PrintBuf == 0)) return(err);
bufptr = 0; /* init to first buffer */
/* set line spacing to 24 printer lines
(24144 -> 36/216 inch) */
return((*(PD->pd_PW:ite))("\0333\044", 3));
/* thats Esc3<36> */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /* wait for both buffers to empty */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /* there is rowsize dots */
PD->pd_PrintBuf[bufptr+bufsize-2] = 13;
PD->pd_PrintBuf[bufptr+bufsize-1] = 10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EreeMem(PD->pd_PrintBuf,bufsize*2);
   /* free the print buffer mem */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         case 4 : /* free the print buffer memory */
                                                                                                                                                                                                                                                                                                                           /* fill print buffer */
return(0); /* flag all ok */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      return(0); /* flag all ok */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    err=(*(PD->pd_PBothReady))()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          case 3 : /* clear and init buffer */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              return (err);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    return (0);
                                                                                                                                                                                  break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      break:
                                                                                                                                                                                                                                                case 1 :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      default:
```

### Types of Supported Printers

The available printers that are supported for the Amiga include both whole character (daisy wheel) and dot matrix (wire, ink jet, and laser) types. As with printer capabilities, printer prices range widely, from just over \$200 to over \$3500. In general, the dot matrix printers are capable of graphics output, while "whole character" printers are not.

Every attempt has been made to support a given feature on each printer that, itself, supports that feature. For example, the daisy wheel printers lack the capability to produce characters such as enlarged or italic print. Similarly, the dot matrix printers often lack such features as proportional spacing.

None of the supported printers currently supports all of the available features. (The Epson JX-80 and the HP LaserJet Plus come closest.) Whenever the system requests an unsupported feature, the PRT: handler simply ignores that request. (The "generic" printer driver currently ignores all feature requests.)

If two or more features are each available for a particular printer, they should be usable in combination. For example, Bold-Italic-Underscore is a possible style for many printers.

If your printer is not among those supported for the Amiga, you have two options. If your printer shares a number of common features with one of the supported printers, you can select that printer in Preferences. Keep in mind, however, that one or more of the chosen printer's features might not produce a similar effect on your printer.

Your second option is to select "Custom" from the list of supported printers in Preferences and "Generic" as the custom printer name. You can then construct a custom printer driver following the directions in the Amiga ROM Kernel Manual.

The following table lists the printers that are currently supported for the Amiga, grouped according to print technology.

### Table 1: Printers Supported on the Amiga

### Dot Matrix (Wire), Parallel

Manufacturer

Model

Commodore Epson

**CBM MPS 1000** Epson JX-80

Epson Epson MX-80, FX-80, ... Okimate

Okimate 20

### Daisy Wheel, Parallel

Manufacturer

Model

Alphacom Brother Diablo

Alphapro 101 HR-15XL

630 (Some models are serial)

Diablo Qume

Advantage D25 LetterPro 20

### Ink Jet, Parallel

Manufacturer

Model

Diablo

C-150

Laser, Serial

Manufacturer

Model

Hewlett Packard Hewlett Packard Laser Jet Laser Jet Plus

Other (Custom)

Manufacturer

Model

Limited support is offered for a "generic" printer.

# Table 2: Printer Functions Supported on the Amiga

### Legend:

ISO indicates that the sequence has been defined by the International Standards Organization. This is also very similar to ANSII x3.64.

DEC indicates a control sequence defined by Digital Equipment Corperation.

••• indicates a sequence unique to Amiga.

| Printer     | name:                |       | Alphacom<br>AlphaPro101 | Brother    | Diablo 630<br>HR-15XL |
|-------------|----------------------|-------|-------------------------|------------|-----------------------|
| Code*       | Description          | Defin | ed<br>                  |            |                       |
| С           | Reset                | ISO   | x                       | x          | x                     |
| #1          | Initialize           | ***   | x                       | x          | x                     |
| D           | Line feed            | ISO   | x                       | x          | x                     |
| E           | Line feed, CR        | ISO   | <b>. x</b>              | x          | x                     |
| M           | Reverse line feed    | ISO   | x                       | x          | x                     |
| [0 <b>m</b> | Normal char. set     | ISO   | x                       | x          | ×                     |
| [3m         | Italics on           | ISO   |                         |            |                       |
| [23m        | Italics off          | ISO   |                         |            |                       |
| [4m         | Underline on         | ISO   | x                       | x          | x                     |
| [24m        | Underline off        | ISO   | x                       | , <b>x</b> | x                     |
| [1m         | Boldface on          | ISO   | x                       | x          | x                     |
| [22m        | Boldface off         | ISO   | x                       | x          | x                     |
| [nm         | Set foreground color |       |                         |            |                       |
|             | $(n = \{30-39\})$    | ISO   |                         | x          |                       |
| [nm         | Set background color |       |                         |            |                       |
|             | $(n = \{40-49\})$    | ISO   |                         |            |                       |
| [0w         | Normal pitch         | DEC   | x                       | x          | χ̈́                   |
| [2w         | Elite on             | DEC   | x                       | X.         | <b>x</b> .            |
| [1w         | Elite off            | DEC   | x                       | x          | x                     |
| [4w         | Condensed fine on    | DEC   | x                       | x          | x                     |
| [3w         | Condensed off        | DEC   | x                       | x          | x                     |
| [6w         | Enlarged on          | DEC   |                         |            |                       |
| [5w         | Enlarged off         | DEC   |                         |            |                       |
| [6"z        | Shadow print on      | DEC   | x                       | x          | x                     |
| [5"z        | Shadow print off     | DEC   | x                       | x          | x                     |
| [4"z        | Doublestrike on      | DEC   | x                       | x          | x                     |
| [3"z        | Doublestrike off     | DEC   | x                       | x          | x                     |
| [2"z        | NLQ on **            | DEC   |                         |            |                       |
| [1"z        | NLQ off **           | DEC   |                         |            |                       |
|             |                      |       |                         |            |                       |

<sup>•</sup> Entire escape sequence consists of ESC (ASCII 27) plus indicated code.
• • Near Letter Quality
• • • • Sequence unique to Amiga

| Printer     | name:                   |         | Alphacom<br>AlphaPro101 | Diablo 630<br>HR-15XL |    |  |  |  |
|-------------|-------------------------|---------|-------------------------|-----------------------|----|--|--|--|
| Code        | Description             | Defined |                         |                       |    |  |  |  |
| [2v         | Superscript on          | ***     | <b>x</b> *              | x                     | x  |  |  |  |
| [1v         | Superscript off         | ***     | x                       | x                     | x  |  |  |  |
| [4v         | Subscript on            | ***     | <b>X</b> .              | x                     | x  |  |  |  |
| [3v         | Subscript off           | ***     | x                       | x                     | x  |  |  |  |
| [0v         | Normalize the line      | ***     | x                       | x                     | x  |  |  |  |
| Ĺ           | Partial line up         | ISO     | x                       | x                     | x  |  |  |  |
| K           | Partial line down       | ISO     | x                       | x                     | x  |  |  |  |
| (B          | U.S. char. set          | DEC     |                         |                       |    |  |  |  |
| (R          | French "                | DEC     |                         |                       |    |  |  |  |
| ίκ          | German "                | DEC     |                         |                       |    |  |  |  |
| (A          | UK " "                  | DEC     |                         |                       |    |  |  |  |
| (E          | Danish I " "            | DEC     |                         |                       |    |  |  |  |
| H           | Swedish " "             | DEC     |                         |                       |    |  |  |  |
| Y           | Italian " "             | DEC     |                         |                       |    |  |  |  |
| Z           | Spanish " "             | DEC     |                         |                       |    |  |  |  |
| J           | Japanese " "            | ***     |                         |                       |    |  |  |  |
| <b>(</b> 6  | Norwegian " "           | DEC     |                         |                       |    |  |  |  |
| (C          | Danish II ""            | ***     |                         |                       |    |  |  |  |
| [2p         | Proportional on         | ***     | x                       | x                     | x  |  |  |  |
| [1p         | Proportional off        | ***     | x                       | x                     | x  |  |  |  |
| 0 <b>p</b>  | Proportional clear      | ***     | x                       | x                     | x  |  |  |  |
| nΕ          | Set prop. offset (n)    | ISO     |                         | x                     | •• |  |  |  |
| 5 F         | Auto left justify       | ISO     | x                       | <del></del>           | x  |  |  |  |
| 7 F         | Auto right justify      | ISO     | x                       |                       | •  |  |  |  |
| 6 F         | Auto full justify       | ISO     |                         |                       |    |  |  |  |
| 0 F         | Justify off             | ISO     | x                       |                       | x  |  |  |  |
| 3 F         | Letter space (justify)  | ISO     |                         |                       | •  |  |  |  |
| [1 F        | Word fill (auto center) | ISO     |                         |                       | x  |  |  |  |
| [0z         | 1/8" line spacing       | ***     | x                       | x                     | x  |  |  |  |
| [1z         | 1/6" line spacing       | ***     | x                       | x                     | x  |  |  |  |
| nt          | Set form length (n)     | DEC     | x                       | x                     | x  |  |  |  |
| nq<br>[0-   | Perf skip $(n>0)$ *     | ***     |                         |                       |    |  |  |  |
| [0 <b>q</b> | Perf skip off           | ***     |                         |                       | •  |  |  |  |

<sup>\*</sup>Paper perforation skip, n lines

| Printer name:     |                        |     | Diablo 630<br>HR-15XL |            |            |  |  |
|-------------------|------------------------|-----|-----------------------|------------|------------|--|--|
| Code              | Code Description       |     | Defined               |            |            |  |  |
| [0z               | 1/8" line spacing      | *** | x                     | x          | x          |  |  |
| [1z               | 1/6" line spacing      | *** | x                     | x          | x          |  |  |
| nt                | Set form length (n)    | DEC | x                     | x          | x          |  |  |
| [nq               | Perf skip (n>0)*       | *** |                       |            |            |  |  |
| [Oq Perf skip off |                        | *** |                       |            |            |  |  |
| #9                | Left margin set        | *** | x                     | x          | x          |  |  |
| #0                | Right margin set       | *** | x                     | x          |            |  |  |
| #8                | Top margin set         | *** | . <b>x</b> .          | ` <b>x</b> | x          |  |  |
| #2                | Bottom margin set      | *** | x                     | x          | x          |  |  |
| [n1;n2]           | 2r Top; Bottom margins | DEC |                       | • •        |            |  |  |
| [nl;n2]           | 2s Left; Right margins | DEC |                       | x          | x          |  |  |
| #3                | Clear margins          | *** |                       | x          | <b>x</b> . |  |  |
| H                 | Set horiz. tab         | ISO |                       | ×          | x          |  |  |
| J                 | Set vert. tab          | ISO |                       | x          | <b>x</b> . |  |  |
| [Og               | Clear horiz. tab       | ISO |                       | x          | x          |  |  |
| [3g               | Clear all hor, tabs    | ISO |                       | x          | x          |  |  |
| [1g               | Clear vert. tab        | ISO |                       |            | x          |  |  |
| [4g               | Clear all vert. tabs   | ISO |                       | x          |            |  |  |
| #4                | Clear all h & v tabs   | *** |                       | x          | x          |  |  |
| #5                | Set default tabs       | *** |                       | x          | x          |  |  |
| In"x              | (Extended commands)    | ••• |                       |            |            |  |  |

| Printer name: |                      |       | CBM<br>MPS-1000 | Epson<br>JX-80 | Epson<br>X-80 |
|---------------|----------------------|-------|-----------------|----------------|---------------|
| Code*         | Description          | Defin | ned<br>         |                |               |
| С             | Reset                | ISO   | x               | x              | x             |
| #1            | Initialize           | ***   | x               | x              | x             |
| D             | Line feed            | ISO   | ×               | x              | x             |
| E             | Line feed, CR        | ISO   | x               | x              | X             |
| M             | Reverse line feed    | ISO   |                 | x              |               |
| [0m           | Normal char. set     | ISO   | x               | x              | ~             |
| [3m           | Italics on           | ISO   | •               | X              | x<br>x        |
| [23m          | Italics off          | ISO   |                 | X              | X<br>X        |
| [4m           | Underline on         | ISO   | x               | x              |               |
| [24m          | Underline off        | ISO   | x               | x              | x<br>x        |
| [1m           | Boldface on          | ISO   | x               | ×              | X             |
| [22m          | Boldface off         | ISO   | x               | x              | X             |
| nm            | Set foreground color |       |                 |                | ^             |
|               | $(n = \{30-39\})$    | ISO   |                 | x              |               |
| nm            | Set background color |       |                 |                |               |
|               | $(n = \{40-49\})$    | ISO   |                 |                | •             |
| 0w            | Normal pitch         | DEC   | x               | x              | x             |
| 2w            | Elite on             | DEC   | x               | x              | x             |
| 1w            | Elite off            | DEC   | x               | x              | X             |
| 4w            | Condensed fine on    | DEC   | x               | x              | x             |
| 3w            | Condensed off        | DEC   | x               | x              | X             |
| 6w            | Enlarged on          | DEC   | x               | x              | x             |
| 5w            | Enlarged off         | DEC   | x               | · <b>X</b>     | x             |
| 6"z           | Shadow print on      | DEC   |                 | **             |               |
| 5"z           | Shadow print off     | DEC   |                 |                |               |
| 4"z           | Doublestrike on      | DEC   | x               | x              | v             |
| 3"z           | Doublestrike off     | DEC   | X               | X              | X             |
| 2"z           | NLQ on **            | DEC   | x               | X              | X             |
| 1"z           | NLQ off **           | DEC   | x               | X              | x<br>x        |
|               |                      |       |                 | •              |               |

<sup>Entire escape sequence consists of ESC (ASCII 27) plus indicated code.
Near Letter Quality
Sequence unique to Amiga</sup> 

| Printer name:                  |                         |         | CBM<br>MPS-1000 | Epson<br>JX-80 | Epson<br>X-80 |  |
|--------------------------------|-------------------------|---------|-----------------|----------------|---------------|--|
| Code                           | Description             | Defined |                 |                |               |  |
| [2v                            | Superscript on          | ***     | x               | x              | x             |  |
| [1v                            | Superscript off         | ***     | x               | x              | x             |  |
| [4v                            | Subscript on            | ***     | x               | x              | x             |  |
| [3v                            | Subscript off           | ***     | x               | x              | x             |  |
| [0v                            | Normalize the line      | ***     | x               | x              | x             |  |
| L                              | Partial line up         | ISO     | x               | x              | x             |  |
| K                              | Partial line down       | ISO     | x               | <b>x</b>       | <b>X</b>      |  |
| (B                             | U.S. char. set          | DEC     | x               | x              | x             |  |
| (R                             | French " "              | DEC     | x               | x              | x             |  |
| (K                             | German " "              | DEC     | x               | x              | x             |  |
| (A                             | UK " "                  | DEC     | · <b>x</b>      | x<br>x         | x             |  |
| (E Danish I " " (H Swedish " " | Danish I " "            | DEC     | x               |                | x             |  |
|                                | DEC                     | x       | x               | x              |               |  |
| (Y                             | Italian " "             | DEC     | x<br>x<br>x     | x<br>x<br>x    | x             |  |
| (Z                             | Spanish " "             | DEC     |                 |                | x             |  |
| (J                             | Japanese " "            | ***     |                 |                | x             |  |
| (6                             | Norwegian " "           | DEC     | x               | x              | x             |  |
| (C                             | Danish II " "           | ***     | x               | x              | X             |  |
| [2p                            | Proportional on         | ***     | x               | x              | x             |  |
| [1p                            | Proportional off        | ***     | x               | x              | x             |  |
| [0p                            | Proportional clear      | ***     |                 |                |               |  |
| n E                            | Set prop. offset (n)    | ISO     |                 |                |               |  |
| [5 F                           | Auto left justify       | ISO     |                 | x              | x             |  |
| [7 F                           | Auto right justify      | ISO     |                 | x              | x             |  |
| [6 F                           | Auto full justify       | ISO     | x               | x              | x             |  |
| [O F                           | Justify off             | ISO     | x               | x              | x             |  |
| [3 F                           | Letter space (justify)  | ISO     |                 | x              | x             |  |
| [1 F                           | Word fill (auto center) | ISO     |                 | x              | x             |  |
| [0z                            | 1/8" line spacing       | ***     | x               | x              | x             |  |
| 1z                             | 1/6" line spacing       | ***     | x               | x              | x             |  |
| [nt                            | Set form length (n)     | DEC     | x               | X              | x             |  |
| [nq                            | Perf skip $(n>0)$ *     | ***     | x               | x              | X             |  |
| [0q                            | Perf skip off           | ***     | x               | x              | x             |  |

<sup>\*</sup>Paper perforation skip, n lines

| Printer name:        |                            |     | CBM<br>MPS-1000 | Epson<br>JX-80 | Epson<br>X-80 |  |
|----------------------|----------------------------|-----|-----------------|----------------|---------------|--|
| Code                 | Code Description           |     | Defined         |                |               |  |
| #9                   | #9 Left margin set         |     |                 |                |               |  |
| #0                   | Right margin set           | *** |                 |                |               |  |
| #8                   |                            | *** |                 |                |               |  |
| #2 Bottom margin set | ***                        |     |                 |                |               |  |
| [n1;n2]              | [n1;n2r Top;Bottom margins |     |                 |                |               |  |
| [n1;n2]              | [n1;n2s Left;Right margins | DEC | x               | x              | x             |  |
| #3                   |                            | *** | x               | x              | x             |  |
| н                    | Set horiz, tab             | ISO |                 |                |               |  |
| J                    | Set vert. tab              | ISO |                 |                |               |  |
| [0g                  | Clear horiz. tab           | ISO |                 |                |               |  |
| [3g                  | Clear all hor, tabs        | ISO | x               | X              | x             |  |
| [1g                  | Clear vert. tab            | ISO |                 |                |               |  |
| [4g                  | Clear all vert. tabs       | ISO | x               | x              | x             |  |
| #4                   | Clear all h & v tabs       | *** | x               | x              | x             |  |
| #5                   | Set default tabs           | *** | x               | x              | x             |  |
| [n"x                 | (Extended commands)        | *** |                 |                |               |  |

| Printer name: |                      |        | Diablo<br>Advantage25 | Diablo<br>C-150 | Okimate 20 |
|---------------|----------------------|--------|-----------------------|-----------------|------------|
| Code*         | Description          | Define | j<br>                 |                 |            |
| С             | Reset                | ISO    | x                     | x               | x          |
| #1            | Initialize           | ***    | x                     | x               | x          |
| D             | Line feed            | ISO    |                       |                 |            |
| E             | Line feed, CR        | ISO    | x                     | x               | x          |
| M             | Reverse line feed    | ISO    | x                     |                 |            |
| [0m           | Normal char. set     | ISO    | x                     |                 | x          |
| [3m           | Italics on           | ISO    |                       |                 | x          |
| [23m          | Italics off          | ISO    |                       |                 | x          |
| [4m           | Underline on         | ISO    | x                     |                 | x          |
| [24m          | Underline off        | ISO    | x                     |                 | x          |
| [1m           | Boldface on          | ISO    | x                     |                 |            |
| [22m          | Boldface off         | ISO    | x                     |                 |            |
| [nm           | Set foreground color |        |                       |                 |            |
|               | $(n = \{30-39\})$    | ISO    | x                     | x               |            |
| [nm           | Set background color |        |                       |                 |            |
|               | $(n = \{40-49\})$    | ISO    |                       | x               |            |
| [0w           | Normal pitch         | DEC    | x                     |                 | x          |
| (2w           | Elite on             | DEC    | x                     |                 | x          |
| [1w           | Elite off            | DEC    | x                     |                 | x          |
| [4w           | Condensed fine on    | DEC    | x                     |                 | x          |
| [3w           | Condensed off        | DEC    | x                     |                 | x          |
| [6w           | Enlarged on          | DEC    |                       |                 | x          |
| [5w           | Enlarged off         | DEC    |                       |                 | x          |
| [6"z          | Shadow print on      | DEC    | x                     |                 |            |
| [5"z          | Shadow print off     | DEC    | x                     |                 |            |
| [4"z          | Doublestrike on      | DEC    | x                     |                 |            |
| [3"z          | Doublestrike off     | DEC    | x                     |                 |            |
| [2"z          | NLQ on **            | DEC    |                       |                 | x          |
| [1"z          | NLQ off **           | DEC    |                       |                 | x          |
| •             |                      |        |                       |                 |            |

<sup>•</sup> Entire escape sequence consists of ESC (ASCII 27) plus indicated code.
•• Near Letter Quality
••• Sequence unique to Amiga

| Printer     | name:                   |         | Diablo<br>Advantage25 | Diablo<br>C-150 | Okimate 20 |  |
|-------------|-------------------------|---------|-----------------------|-----------------|------------|--|
| Code        | Description             | Defined |                       |                 |            |  |
| [2v         | Superscript on          | ***     | х                     | x               | X          |  |
| [1v         | Superscript off         | ***     | x                     | x               | x          |  |
| [4v         | Subscript on            | ***     | x                     | x               | x          |  |
| [3v         | Subscript off           | ***     | x                     | x               | x          |  |
| [0v         | Normalize the line      | ***     | x                     | x               | x          |  |
| L           | Partial line up         | ISO     | x                     |                 | x          |  |
| K<br>       | Partial line down       | ISO     | <b>x</b>              |                 | х          |  |
| (B          | U.S. char. set          | DEC     |                       |                 |            |  |
| (R          | French " "              | DEC     |                       |                 |            |  |
| (K          | German " "              | DEC     |                       |                 |            |  |
| (A          | UK " "                  | DEC     | ·. ·                  |                 |            |  |
| (E          | Danish I " "            | DEC     |                       |                 |            |  |
| (H          | Swedish " "             | DEC     |                       |                 |            |  |
| (Y          | Italian " "             | DEC     |                       |                 |            |  |
| (Z          | Spanish " "             | DEC     |                       |                 |            |  |
| (J          | Japanese " "            | ***     |                       |                 |            |  |
| (6          | Norwegian " "           | DEC     |                       |                 |            |  |
| (C          | Danish II " "           | ***     |                       |                 |            |  |
| [2p         | Proportional on         | ***     | x                     |                 | x          |  |
| [1p         | Proportional off        | ***     | x                     |                 | x          |  |
| [0p         | Proportional clear      | ***     | x                     |                 | X          |  |
| n E         | Set prop. offset (n)    | ISO     | x                     |                 | ^          |  |
| 5 F         | Auto left justify       | ISO     | X                     |                 |            |  |
| 7 F         | Auto right justify      | ISO     |                       |                 |            |  |
| [6 F        | Auto full justify       | ISO     |                       |                 |            |  |
| [0 F        | Justify off             | ISO     | x                     |                 |            |  |
| [3 F        | Letter space (justify)  | ISO     |                       |                 |            |  |
| [1 F        | Word fill (auto center) | ISO     |                       |                 |            |  |
| [0z         | 1/8" line spacing       | ***     | v                     |                 |            |  |
| 1z          | 1/6" line spacing       | ***     | x                     |                 | x          |  |
| nt          | Set form length $(n)$   | DEC     | . <b>x</b>            |                 | x          |  |
| nq          | Perf skip (n>0)*        | ***     | X<br>                 | x               | x          |  |
| [0 <b>q</b> | Perf skip off           | ***     | ×                     |                 | x          |  |
| • •         |                         |         | x                     |                 | x          |  |

<sup>\*</sup>Paper perforation skip, n lines

| Printer                                                           | name:                | Diablo Diablo Okimate<br>Advantage25 C-150 |            |            |   |  |
|-------------------------------------------------------------------|----------------------|--------------------------------------------|------------|------------|---|--|
| Code                                                              | Description          | Defined                                    | j<br>      |            |   |  |
| #9                                                                | Left margin set      | ***                                        | x          | x          |   |  |
| #0                                                                | Right margin set     | ***                                        | x          | x          |   |  |
| #8 Top margin set #2 Bottom margin set [n1;n2r Top;Bottom margins | Top margin set       | ***                                        | x          |            |   |  |
|                                                                   | DEC                  | x                                          |            |            |   |  |
|                                                                   |                      |                                            |            |            |   |  |
| [n1;n2s]                                                          | Left; Right margins  | DEC                                        | x          | x          |   |  |
| #3                                                                | Clear margins        | **                                         | X          | x          |   |  |
| Н                                                                 | Set horiz, tab       | ISO                                        | x          | x          |   |  |
| J                                                                 | Set vert. tab        | ISO                                        | <b>x</b> . | • -        |   |  |
| [0g                                                               | Clear horiz. tab     | ISO                                        | x          | · <b>x</b> |   |  |
| [3g                                                               | Clear all hor. tabs  | ISO                                        | x          | x          |   |  |
| [1g                                                               | Clear vert. tab      | ISO                                        | x          |            |   |  |
| [4g                                                               | Clear all vert. tabs | ISO                                        |            |            |   |  |
| #4                                                                | Clear all h & v tabs | ***                                        | x          | x          | • |  |
| #5                                                                | Set default tabs     | ***                                        | x          | x          |   |  |
| ſn"x                                                              | (Extended commands)  | ***                                        |            |            |   |  |

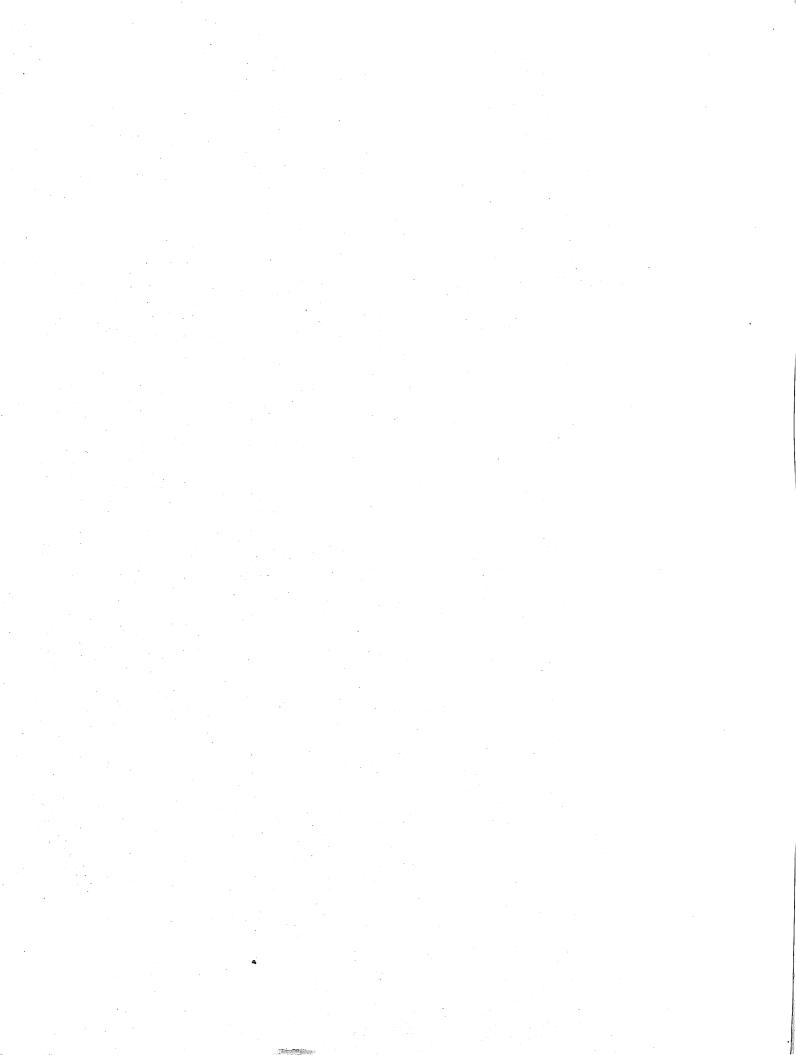
| Printer name: |                      |         | HP<br>LaserJet | HP<br>LaserJet | Qume<br>Plus LetterPro 20 |  |
|---------------|----------------------|---------|----------------|----------------|---------------------------|--|
| Code*         | Description          | Defined |                |                |                           |  |
| С             | Reset                | ISO     | x              | x              | x                         |  |
| #1            | Initialize           | ***     | x              | x              | x                         |  |
| D             | Line feed            | ISO     | x              | x              | x                         |  |
| E             | Line feed, CR        | ISO     | x              | x              | X                         |  |
| M             | Reverse line feed    | ISO     |                |                | x                         |  |
| [0m           | Normal char. set     | ISO     | x              | x              | ~                         |  |
| [3m           | Italics on           | ISO     | x              | x              | X                         |  |
| [23m          | Italics off          | ISO     | . <b>x</b>     | x              |                           |  |
| [4m           | Underline on         | ISO     | . x            | x              | v                         |  |
| [24m          | Underline off        | ISO     | x              | x              | x<br>x                    |  |
| [1m           | Boldface on          | ISO     | x              | x              | X                         |  |
| [22m          |                      | ISO     | x              | x              | X                         |  |
| [nm           | Set foreground color |         | •              | •              | *                         |  |
| •             | $(n = \{30-39\})$    | ISO     |                |                | x                         |  |
| [nm           | Set background color |         |                |                | ^                         |  |
|               | $(n = \{40-49\})$    | ISO     |                |                |                           |  |
| [0w           | Normal pitch         | DEC     | x              | x              | x                         |  |
| [2w           | Elite on             | DEC     | ×              | x              | X                         |  |
| [1w           | Elite off            | DEC     | x              | x              | X                         |  |
| [4w           | Condensed fine on    | DEC     | x              | x              | X                         |  |
| [3w           | Condensed off        | DEC     | x              | x              | X                         |  |
| [6w           | Enlarged on          | DEC     |                |                | ^                         |  |
| (5w           | Enlarged off         | DEC     |                |                |                           |  |
| [6"z          | Shadow print on      | DEC     |                |                |                           |  |
| [5"z          | Shadow print off     | DEC     |                |                | X                         |  |
| [4"z          | Doublestrike on      | DEC     | ~              | ~              | X                         |  |
| 3"z           | Doublestrike off     | DEC     | x<br>x         | X              | X                         |  |
| [2"z          | NLQ on **            | DEC     | ^              | x              | X                         |  |
| [1"z          | NLQ off **           | DEC     |                |                |                           |  |
|               |                      | DEC     |                |                |                           |  |

<sup>Entire escape sequence consists of ESC (ASCII 27) plus indicated code.
Near Letter Quality
Sequence unique to Amiga</sup> 

| Printer     | Printer name:           |         | HP<br>LaserJet | HP<br>LaserJet | Qume<br>Plus LetterPro 20 |  |
|-------------|-------------------------|---------|----------------|----------------|---------------------------|--|
| Code        | Description             | Defined |                |                |                           |  |
| [2v         | Superscript on          | ***     | x              | X              | X                         |  |
| [1v         | Superscript off         | ***     | x              | x              | x                         |  |
| [4v         | Subscript on            | ***     | x              | x              | x                         |  |
| [3v         | Subscript off           | ***     | x              | x              | x                         |  |
| [0v         | Normalize the line      | ***     | x              | x              | x                         |  |
| L           | Partial line up         | ISO     | x              | x              | x                         |  |
| K           | Partial line down       | ISO     | x              | <b>x</b>       | <b>x</b>                  |  |
| (B          | U.S. char. set          | DEC     | x              | x              |                           |  |
| (R          | French " "              | DEC     |                |                |                           |  |
| (K          | German " "              | DEC     |                |                |                           |  |
| (A          | UK " "                  | DEC     | x              | · <b>x</b>     |                           |  |
| (E          | Danish I " "            | DEC     |                | •              |                           |  |
| (H          | Swedish " "             | DEC     |                |                |                           |  |
| (Y          | Italian " "             | DEC     |                |                |                           |  |
| (Z          | Spanish " "             | DEC     |                |                |                           |  |
| (J          | Japanese " "            | ***     | x              | x              |                           |  |
| (6          | Norwegian " "           | DEC     |                |                |                           |  |
| (C          | Danish II " "           | ***     |                |                |                           |  |
| [2p         | Proportional on         | ***     | x              | x              |                           |  |
| [1p         | Proportional off        | ***     | x              | X              | X                         |  |
| [0p         | Proportional clear      | ***     | x              | X              | X                         |  |
| [n E        | Set prop. offset (n)    | ISO     |                | •              | X                         |  |
| [5 F        | Auto left justify       | ISO     |                |                | x                         |  |
| [7 F        | Auto right justify      | ISO     |                |                |                           |  |
| [6 F        | Auto full justify       | ISO     |                |                |                           |  |
| [0 F        | Justify off             | ISO     | ×              |                |                           |  |
| [3 F        | Letter space (justify)  | ISO     | •              |                |                           |  |
| [1 F        | Word fill (auto center) | ISO     |                |                |                           |  |
| [0z         | 1/8" line spacing       | ***     | x              | ~              | ~                         |  |
| [1z         | 1/6" line spacing       | ***     |                | X              | X                         |  |
| nt          | Set form length (n)     |         | X              | X              | X                         |  |
| [nq         | Perf skip $(n>0)$ *     | DEC     | X              | X              | x                         |  |
| [0 <b>q</b> | Perf skip off           | ***     | ×              | X              |                           |  |
| ر <b>بر</b> | Terr skip off           |         | x              | x              |                           |  |

<sup>\*</sup>Paper perforation skip, n lines

| Printer name: |                       | HP<br>LaserJet |        | HP<br>LaserJet | Qume<br>Plus LetterPro 20 |
|---------------|-----------------------|----------------|--------|----------------|---------------------------|
| Code          | Description           | Defin          | ed<br> |                |                           |
| #9            | Left margin set       | ***            |        |                | ×                         |
| #0            | Right margin set      | ***            |        |                | x                         |
| #8            | Top margin set        | ***            |        |                |                           |
| #2            | Bottom margin set     | ***            |        |                |                           |
| [n1;n2]       | r Top; Bottom margins | DEC            | x      | x              | x                         |
| [n1;n2]       | s Left; Right margins | DEC            | x      | x              |                           |
| #3            | Clear margins         | ***            | x      | x              | <b>x</b>                  |
| н             | Set horiz. tab        | ISO            |        |                |                           |
| J             | Set vert. tab         | ISO            |        |                |                           |
| [0g           | Clear horiz, tab      | ISO            |        |                |                           |
| [3g           | Clear all hor, tabs   | ISO            |        |                |                           |
| [1g           | Clear vert. tab       | ISO            |        |                |                           |
| [4g           | Clear all vert. tabs  | ISO            |        |                |                           |
| #4            | Clear all h & v tabs  | ***            |        |                |                           |
| #5            | Set default tabs      | ***            |        |                |                           |
| [Pn"x         | (Extended commands)   | ***            |        |                |                           |



## Appendix J

### Software Memory Map

This appendix is for the convenience of the software developer who may be directly accessing the system hardware registers. It is simply the hardware memory map appropriate to the ROM Kernel manual.

A true software memory map, showing system utilization of the various sections of RAM and free space is not provided. The system is dynamically allocated and linked such that it would not be possible to show precisely which parts of RAM are utilized by the ROM Kernel. User code, if written with the Amiga Assembler or Amiga C, and linked by the Amiga linker is relocatable and can load and execute wherever there is a large enough area of memory in which it can fit.

Therefore, aside from specifying that Exec manages the lowest parts of the 68000 memory space (exception and trap vectors), no actual software memory utilization map can be provided.

SYSTEM MEMORY MAP -

This system memory map for the ROM Kernel manual is a combination of the Appendicies D (mem.map) and F (8520 info) from the Amiga PC Hardware Manual. Actual bit assignments for the 8520's and current additional details can be found in the Amiga Hardware Manual.

Note: If you select to read or write an address that is not specifically decoded, you WILL generate an address error.

ADDRESS RANGE NOTES

[ 256k RAM ]

000000-3FFFFF RAM space for 256k RAM

040000-080000 Not used if extra 256k board not installed.
Do NOT access in this range - dangerous side effects.

[ 512k RAM ]

000000-07FFFF RAM space for 512k RAM

080000-1FFFFF Do NOT access in this range.

200000-9FFFFF Expansion space (8 megabytes)

A00000-BEFFFF External decoder expansion space

BFD000-BFDF00 8520-B (accessed only at

Reserved for future use. See note (1) below.

EVEN byte addresses)

The underlined digit chooses which of the 16 internal registers of the 8520 is to be accessed. See also note (5)

ADDRESS RANGE NOTES

BFE001-BFEF01 8520-A (accessed only at

ODD byte addresses)

The underlined digit chooses which of the 16 internal registers of the 8520 is to be accessed.

Register Names are given in note (2) below.

Other addresses in the range of:

C00000-DFEFFF Reserved for future use

DFF000-DFFFFF Special purpose chips, where

the last three digits specify the chip register WORD address.

The chip addresses are specified in separate pages immediately following this overall memory

map.

E00000-E7FFFF Reserved for future use.

E80000-EFFFFF Expansion Slot decoding, see

note (1) below.

F00000-F7FFFF Reserved for future use.

F80000-FFFFFF SYSTEM ROM or kickstart RAM.

#### NOTES FOR THE SYSTEM MEMORY MAP:

#### (1) Expansion Slot decoding:

Boards designed to respond in this range must adhere to the auto-configuration guidelines to be published in Dec. 1985 by Commodore-Amiga Inc.

(2) The names of the registers within the 8520's are as follows. The address at which each are to be accessed (per note 1 above) is given here in this list.

#### Address for:

| 8520-A                                                                                                                                             | 8520-B                                                                                                                                   | NAME                                                                 | EXPLANATION                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                    |                                                                                                                                          |                                                                      | (write)/(read mode)                                                                                                                                                                                                                                                                                                                                     |
| BFE001<br>BFE101<br>BFE201<br>BFE301<br>BFE401<br>BFE501<br>BFE601<br>BFE701<br>BFE801<br>BFE901<br>BFEA01<br>BFEB01<br>BFEC01<br>BFED01<br>BFED01 | BFD000<br>BFD100<br>BFD200<br>BFD300<br>BFD400<br>BFD500<br>BFD600<br>BFD700<br>BFD800<br>BFDA00<br>BFDB00<br>BFDD00<br>BFDD00<br>BFDD00 | PRA PRB DDRB DDRA TALO TAHI TBLO TBHI TODLO TODMID TODHI SDR ICR CRA | Peripheral Data Register A Peripheral Data Register B Data Direction Register "A" Data Direction Register "B" TIMER A Low Register TIMER A High Register TIMER B Low Register TIMER B High Register TIMER B High Register Low TOD Clock Mid TOD Clock High TOD Clock Register Unused Serial Data Register Interrupt Control Register Control Register A |
| BFEF01                                                                                                                                             | BFDF00                                                                                                                                   | CRB                                                                  | Control Register B                                                                                                                                                                                                                                                                                                                                      |

#### SPECIAL PURPOSE CHIP ADDRESSES

The following are the "offset" addresses for the special purpose chips in the Amiga PC. Each address figure shown below must be added to the base address of hex DFF000. Again the addressing follows the convention shown in note 1 of the system memory map.

Each register is located at an even WORD (16-bit) boundary.

| NAME    | OFFSET       | R/W | EXPLANATION                            |
|---------|--------------|-----|----------------------------------------|
|         |              |     |                                        |
| ADKCON  | 09E          | W   | Audio, Disk, Control write             |
| ADKCONR | 010          | R   | Audio, disk, Control read              |
|         |              |     |                                        |
| AUDODAT | 0AA          | W   | Audio channel 0 Data                   |
| AUD0LCH | 0 <b>A</b> 0 | W   | Audio channel 0 location (High 3 bits) |
| AUDOLCL | 0A2          | W   | Audio channel 0 location (Low 16 bits) |
| AUDOLEN | 0 <b>A4</b>  | W   | Audio Channel 0 length                 |
| AUD0PER | 0 <b>A</b> 6 | W   | Audio channel 0 Period                 |
| AUD0VOL | 0A8          | W   | Audio Channel O Volume                 |

| NAME               | OFFSET | R/W | EXPLANATION                                      |
|--------------------|--------|-----|--------------------------------------------------|
| AUD1DAT            | 0BA    | W   | Audio channel 1 Data                             |
| AUD1LCH            | 0B0    | W   | Audio channel 1 location (High 3 bits)           |
| AUD1LCL            | 0B2    | W   | Audio channel 1 location (Low 16 bits)           |
| AUD1LEN            | 0B4    | W   | Audio Channel 1 length                           |
| AUD1PER            | 0B6    | W   | Audio channel 1 Period                           |
| AUD1VOL            | 0B8    | W   | Audio Channel 1 Volume                           |
| AUD2DAT            | 0CA    | W   | Audio channel 2 Data                             |
| AUD2LCH            | 0C0    | W   | Audio channel 2 location (High 3 bits)           |
| AUD2LCL            | 0C2    | W   | Audio channel 2 location (Low 16 bits)           |
| AUD2LEN            | 0C4    | W   | Audio Channel 2 length                           |
| AUD2PER            | 0C6    | W   | Audio channel 2 Period                           |
| AUD2VOL            | 0C8    | W   | Audio Channel 2 Volume                           |
| AUD3DAT            | 0DA    | W   | Audio channel 3 Data                             |
| AUD3LCH            | 0D0    | W   | Audio channel 3 location (High 3 bits)           |
| AUD3LCL            | 0D2    | W   | Audio channel 3 location (Low 16 bits)           |
| AUD3LEN            | 0D4    | W   | Audio Channel 3 length                           |
| AUD3PER            | 0D6    | W   | Audio channel 3 Period                           |
| AUD3VOL            | 0D8    | W   | Audio Channel 3 Volume                           |
| BLTAFWM            | 044    | W   | Blitter first word mask for source A             |
| BLTALWM            | 046    | W   | Blitter last word mask for source A              |
| BLTCON0            | 040    | W   | Blitter control register 0                       |
| BLTCON1            | 042    | W   | Blitter control register 1                       |
| BLTSIZE            | 058    | W   | Blitter start and size                           |
|                    |        |     | (window width, height)                           |
|                    |        |     | (window width, height)                           |
| BLTADAT            | 074    | W   | Blitter source A data reg                        |
| BLTAMOD            | 064    | W   | Blitter Modulo A                                 |
| BLTAPTH            | 050    | W   | Blitter Pointer to src or dst.A                  |
| DI                 |        |     | (High 3 bits)                                    |
| BLTAPTL            | 052    | W   | Blitter Pointer A (Low 16 bits)                  |
| DI MDD 1 m         |        |     | •                                                |
| BLTBDAT            | 072    | W   | Blitter source B data reg                        |
| BLTBMOD            | 062    | W   | Blitter Modulo B                                 |
| BLTBPTH            | 04C    | W   | Blitter Pointer to src or dst.B                  |
| BLTBPTL            | 0.45   |     | (High 3 bits)                                    |
| BLTCDAT            | 04E    | W   | Biltter Pointer B (Low 16 bits)                  |
|                    |        | W   | Blitter source C data reg                        |
| BLTCMOD<br>BLTCPTH |        | W   | Blitter Modulo C                                 |
| BLICPIH            | 048    | W   | Blitter Pointer to src or dst.C                  |
| BLTCPTL            | 04A    | W   | (High 3 bits)                                    |
| BLTDMOD            | 066    |     | Blitter Pointer C (Low 16 bits) Blitter Modulo D |
| BLTDPTH            | 054    |     | Blitter Pointer to src or dst.D                  |
|                    |        |     | (High 3 bits)                                    |
| BLTDPTL            |        | W   | Blitter Pointer D (Low 16 bits)                  |
| BPL1MOD            | 108    | W   | Bit plane modulo (odd planes)                    |
| BPL2MOD            | 10A    | W   | Bit Plane modulo (even planes)                   |
|                    |        |     | (over praces)                                    |

| BELCONO 100 W Bit plane control reg. (misc control bits) BPLCON1 102 W Bit plane control reg. (priority control) BPLCON2 104 W Bit plane control reg. (priority control) BPLCON2 104 W Bit plane 1 data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | NAME    | OFFSET      | R/W | EXPLANATION                                |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------|-----|--------------------------------------------|--|--|--|
| BELCONI 102 W Bit plane control reg. (priority control) BPLCON2 104 W Bit Plane control reg. (horiz scrol)  Control)  BPLIDAT 110 W Bit plane 1 data (Parallel to serial convert)  BPL2DAT 112 W Bit plane 2 data (Parallel to serial convert)  BPL3DAT 114 W Bit plane 3 data (Parallel to serial convert)  BPL4DAT 116 W Bit plane 4 data (Parallel to serial convert)  BPL5DAT 118 W Bit plane 5 data (Parallel to serial convert)  BPL5DAT 118 W Bit plane 6 data (Parallel to serial convert)  BPL1PTH 0E0 W Bit plane 1 pointer (High 3 bits)  BPL1PTL 0E2 W Bit plane 1 pointer (Low 16 bits)  BPL2PTH 0E4 W Bit plane 2 pointer (Low 16 bits)  BPL3PTH 0E8 W Bit plane 2 pointer (Low 16 bits)  BPL3PTH 0E8 W Bit plane 3 pointer (High 3 bits)  BPL4PTH 0EC W Bit plane 3 pointer (High 3 bits)  BPL4PTH 0EC W Bit plane 4 pointer (High 3 bits)  BPL4PTH 0EC W Bit plane 5 pointer (High 3 bits)  BPL5PTH 0E6 W Bit plane 5 pointer (High 3 bits)  BPL5PTT 0E7 W Bit plane 5 pointer (Low 16 bits)  BPL5PTT 0E7 W Bit plane 5 pointer (Low 16 bits)  BPL6PTH 0E7 W Bit plane 6 pointer (Low 16 bits)  BPL6PTL 0E7 W Bit plane 6 pointer (Low 16 bits)  BPL6PTL 0E7 W Bit plane 6 pointer (Low 16 bits)  BPL6PTL 0E7 W Bit plane 5 pointer (Low 16 bits)  BPL6PTL 0E7 W Bit plane 5 pointer (Low 16 bits)  BPL6PTL 0E7 W Bit plane 5 pointer (Low 16 bits)  CLXCON 098 W Collision control  CLXCON 180 W Coprocessor first location reg  (Low 16 bits)  COP1LCL 082 W Coprocessor first location reg  (Low 16 bits)  COP2LCH 084 W Coprocessor restart at first location  COPJMP1 088 S Coprocessor restart at second location  DDFSTOT 094 W Display bit plane  data fetch stop (hor pos)  DDFSTOT 094 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                          | BPLCON0 | 100         | W   | Bit plane control req. (misc control bits) |  |  |  |
| BPLIDAT 110 W Bit plane 1 data (Parallel to serial convert) BPLIDAT 112 W Bit plane 2 data (Parallel to serial convert) BPLIDAT 114 W Bit plane 2 data (Parallel to serial convert) BPLIDAT 115 W Bit plane 2 data (Parallel to serial convert) BPLIDAT 116 W Bit plane 3 data (Parallel to serial convert) BPLIDAT 116 W Bit plane 4 data (Parallel to serial convert) BPLIDAT 118 W Bit plane 5 data (Parallel to serial convert) BPLIDAT 118 W Bit plane 5 data (Parallel to serial convert) BPLIDAT 110 W Bit plane 1 pointer (High 3 bits) BPLIDAT 111 W Bit plane 1 pointer (Low 16 bits) BPLIDAT 110 W Bit plane 1 pointer (Low 16 bits) BPLIDAT 111 W Bit plane 2 pointer (High 3 bits) BPLIDAT 111 W Bit plane 3 pointer (Low 16 bits) BPLIDAT 11 W Bit plane 3 pointer (Low 16 bits) BPLIDAT 11 W Bit plane 4 pointer (Low 16 bits) BPLIDAT 11 W Bit plane 4 pointer (Low 16 bits) BPLIDAT 11 W Bit plane 5 pointer (High 3 bits) BPLIDAT 11 W Bit plane 5 pointer (High 3 bits) BPLIDAT 11 W Bit plane 5 pointer (Low 16 bits) BPLIDAT 11 W Bit plane 6 pointer (Low 16 bits) BPLIDAT 11 W Bit plane 6 pointer (Low 16 bits) BPLIDAT 11 W Bit plane 6 pointer (Low 16 bits) BPLIDAT 11 W Bit plane 6 pointer (Low 16 bits) BPLIDAT 11 W Bit plane 6 pointer (Low 16 bits) BPLIDAT 11 W Bit plane 6 pointer (Low 16 bits) BPLIDAT 11 W Bit plane 6 pointer (Low 16 bits) BPLIDAT 11 W Bit plane 6 pointer (Low 16 bits) BPLIDAT 11 W Bit plane 6 pointer (Low 16 bits) BPLIDAT 11 W Bit plane 6 pointer (Low 16 bits) BPLIDAT 11 W Bit plane 6 pointer (Low 16 bits) BPLIDAT 11 W BIT PLANE 11 W BIT |         |             |     |                                            |  |  |  |
| BPLIDAT 110 W Bit plane 1 data (Parallel to serial convert) BPL2DAT 112 W Bit plane 2 data (Parallel to serial convert) BPL3DAT 114 W Bit plane 3 data (Parallel to serial convert) BPL4DAT 116 W Bit plane 4 data (Parallel to serial convert) BPL5DAT 118 W Bit plane 5 data (Parallel to serial convert) BPL5DAT 118 W Bit plane 6 data (Parallel to serial convert) BPL6DAT 11A W Bit plane 6 data (Parallel to serial convert) BPL1PTH 0E0 W Bit plane 1 pointer (High 3 bits) BPL1PTH 0E2 W Bit plane 1 pointer (High 3 bits) BPL2PTH 0E4 W Bit plane 2 pointer (High 3 bits) BPL3PTH 0E6 W Bit plane 3 pointer (High 3 bits) BPL3PTH 0E8 W Bit plane 3 pointer (High 3 bits) BPL3PTH 0E6 W Bit plane 3 pointer (High 3 bits) BPL4PTH 0EC W Bit plane 4 pointer (Low 16 bits) BPL4PTH 0EC W Bit plane 5 pointer (Low 16 bits) BPL4PTH 0EC W Bit plane 5 pointer (High 3 bits) BPL4PTH 0E7 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F4 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (High 3 |         |             |     |                                            |  |  |  |
| BPLIDAT 110 W Bit plane 1 data (Parallel to serial convert) BPL2DAT 112 W Bit plane 2 data (Parallel to serial convert) BPL3DAT 114 W Bit plane 3 data (Parallel to serial convert) BPL4DAT 116 W Bit plane 4 data (Parallel to serial convert) BPL5DAT 118 W Bit plane 5 data (Parallel to serial convert) BPL5DAT 118 W Bit plane 6 data (Parallel to serial convert) BPL6DAT 11A W Bit plane 6 data (Parallel to serial convert) BPL1DTH 0E0 W Bit plane 1 pointer (High 3 bits) BPL2DTH 0E4 W Bit plane 1 pointer (High 3 bits) BPL2DTH 0E6 W Bit plane 2 pointer (Low 16 bits) BPL3DTH 0E8 W Bit plane 3 pointer (Low 16 bits) BPL3DTH 0E8 W Bit plane 3 pointer (Low 16 bits) BPL3DTH 0E8 W Bit plane 3 pointer (Low 16 bits) BPL4DTH 0EC W Bit plane 4 pointer (High 3 bits) BPL5DTH 0E6 W Bit plane 5 pointer (Low 16 bits) BPL5DTH 0E7 W Bit plane 5 pointer (Low 16 bits) BPL5DTH 0E8 W Bit plane 6 pointer (Low 16 bits) BPL5DTH 0E9 W Bit plane 6 pointer (Low 16 bits) BPL5DTH 0E0 W Bit plane 5 pointer (Low 16 bits) BPL5DTH 0E7 W Bit plane 6 pointer (Low 16 bits) BPL6DTH 0E7 W Bit plane 6 pointer (Low 16 bits) BPL6DTH 0E7 W Bit plane 6 pointer (Low 16 bits) BPL6DTH 0E7 W Bit plane 6 pointer (Low 16 bits) BPL6DTH 0E8 W Bit plane 6 pointer (Low 16 bits) BPL6DTH 0E8 W Collision control CLXCON 098 W Collision control CLXCON 180 W Collision data reg. (Read and clear) COLORX 180 W Coprocessor first location reg (High 3 bits)  COPILCL 082 W Coprocessor first location reg (High 3 bits)  COPILCL 084 W Coprocessor second location reg (High 3 bits)  COPILCL 085 W Coprocessor second location reg (Low 16 bits)  COPINS 08C W Coprocessor restart at first location  COPJMP1 088 S Coprocessor restart at first location  DDFSTOP 094 W Display bit plane  data fetch stop (hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                    |         |             |     |                                            |  |  |  |
| BPL3DAT 112 W Bit plane 2 data (Parallel to serial convert)  BPL3DAT 114 W Bit plane 3 data (Parallel to serial convert)  BPL4DAT 116 W Bit plane 4 data (Parallel to serial convert)  BPL5DAT 118 W Bit plane 5 data (Parallel to serial convert)  BPL6DAT 11A W Bit plane 6 data (Parallel to serial convert)  BPL1PTH 0E0 W Bit plane 1 pointer (High 3 bits)  BPL1PTH 0E2 W Bit plane 1 pointer (High 3 bits)  BPL2PTH 0E4 W Bit plane 2 pointer (High 3 bits)  BPL3PTH 0E8 W Bit plane 2 pointer (High 3 bits)  BPL3PTH 0E8 W Bit plane 3 pointer (High 3 bits)  BPL3PTH 0E8 W Bit plane 3 pointer (High 3 bits)  BPL3PTH 0E8 W Bit plane 3 pointer (High 3 bits)  BPL3PTH 0E6 W Bit plane 4 pointer (Low 16 bits)  BPL4PTL 0EE W Bit plane 4 pointer (High 3 bits)  BPL5PTH 0E0 W Bit plane 5 pointer (High 3 bits)  BPL5PTH 0E0 W Bit plane 5 pointer (Low 16 bits)  BPL5PTH 0E0 W Bit plane 5 pointer (Low 16 bits)  BPL6PTH 0E4 W Bit plane 6 pointer (Low 16 bits)  BPL6PTH 0E6 W Bit plane 6 pointer (Low 16 bits)  BPL6PTH 0E6 W Bit plane 6 pointer (Low 16 bits)  BPL6PTH 0E7 W Bit plane 6 pointer (Low 16 bits)  BPL6PTH 0E7 W Bit plane 6 pointer (Low 16 bits)  BPL6PTH 0E7 W Bit plane 6 pointer (Low 16 bits)  CLXCON 098 W Collision control  CLXCON 098 W Collision control  CLXCON 180 W Color table xx (32 WORD ENTRIES, START COLOR 00)  COPILCH 080 W Coprocessor first location reg (High 3 bits)  COPILCH 084 W Coprocessor second location reg. (Low 16 bits)  COPILCH 085 W Coprocessor second location reg. (Low 16 bits)  COPINS 08C W Coprocessor restart at first location  COPJMP1 088 S Coprocessor restart at first location  DDFSTOP 094 W Display bit plane  data fetch stop (hor pos)  DDFSTOR                                                                                                                                                                                                                                                                                                                                                                                        | BPL1DAT | 110         | W   |                                            |  |  |  |
| BPL3DAT 112 W Bit plane 2 data (Parallel to serial convert)  BPL3DAT 114 W Bit plane 3 data (Parallel to serial convert)  BPL4DAT 116 W Bit plane 4 data (Parallel to serial convert)  BPL5DAT 118 W Bit plane 5 data (Parallel to serial convert)  BPL6DAT 11A W Bit plane 6 data (Parallel to serial convert)  BPL1PTH 0E0 W Bit plane 1 pointer (High 3 bits)  BPL1PTH 0E2 W Bit plane 1 pointer (High 3 bits)  BPL2PTH 0E4 W Bit plane 2 pointer (High 3 bits)  BPL3PTH 0E8 W Bit plane 2 pointer (High 3 bits)  BPL3PTH 0E8 W Bit plane 3 pointer (High 3 bits)  BPL3PTH 0E8 W Bit plane 3 pointer (High 3 bits)  BPL3PTH 0E8 W Bit plane 3 pointer (High 3 bits)  BPL3PTH 0E6 W Bit plane 4 pointer (Low 16 bits)  BPL4PTL 0EE W Bit plane 4 pointer (High 3 bits)  BPL5PTH 0E0 W Bit plane 5 pointer (High 3 bits)  BPL5PTH 0E0 W Bit plane 5 pointer (Low 16 bits)  BPL5PTH 0E0 W Bit plane 5 pointer (Low 16 bits)  BPL6PTH 0E4 W Bit plane 6 pointer (Low 16 bits)  BPL6PTH 0E6 W Bit plane 6 pointer (Low 16 bits)  BPL6PTH 0E6 W Bit plane 6 pointer (Low 16 bits)  BPL6PTH 0E7 W Bit plane 6 pointer (Low 16 bits)  BPL6PTH 0E7 W Bit plane 6 pointer (Low 16 bits)  BPL6PTH 0E7 W Bit plane 6 pointer (Low 16 bits)  CLXCON 098 W Collision control  CLXCON 098 W Collision control  CLXCON 180 W Color table xx (32 WORD ENTRIES, START COLOR 00)  COPILCH 080 W Coprocessor first location reg (High 3 bits)  COPILCH 084 W Coprocessor second location reg. (Low 16 bits)  COPILCH 085 W Coprocessor second location reg. (Low 16 bits)  COPINS 08C W Coprocessor restart at first location  COPJMP1 088 S Coprocessor restart at first location  DDFSTOP 094 W Display bit plane  data fetch stop (hor pos)  DDFSTOR                                                                                                                                                                                                                                                                                                                                                                                        |         |             |     |                                            |  |  |  |
| BPL3DAT 114 W Bit plane 3 data (Parallel to serial convert) BPL4DAT 116 W Bit plane 4 data (Parallel to serial convert) BPL5DAT 118 W Bit plane 5 data (Parallel to serial convert) BPL6DAT 11A W Bit plane 6 data (Parallel to serial convert) BPL1PTH 0E0 W Bit plane 1 pointer (High 3 bits) BPL1PTL 0E2 W Bit plane 1 pointer (Low 16 bits) BPL2PTH 0E4 W Bit plane 2 pointer (High 3 bits) BPL3PTH 0E6 W Bit plane 2 pointer (High 3 bits) BPL3PTH 0E8 W Bit plane 3 pointer (High 3 bits) BPL3PTH 0EC W Bit plane 3 pointer (Low 16 bits) BPL3PTH 0EC W Bit plane 3 pointer (High 3 bits) BPL3PTH 0EC W Bit plane 4 pointer (Low 16 bits) BPL4PTH 0EC W Bit plane 5 pointer (High 3 bits) BPL4PTH 0EC W Bit plane 5 pointer (Low 16 bits) BPL5PTH 0F0 W Bit plane 5 pointer (High 3 bits) BPL5PTH 0F0 W Bit plane 5 pointer (High 3 bits) BPL6PTH 0F4 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0F6 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0F6 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0F6 W Bit plane 5 pointer (Low 16 bits) BPL6PTH 0F6 W Bit plane 5 pointer (Low 16 bits) BPL6PTH 0F6 W Bit plane 5 pointer (Low 16 bits) BPL6PTH 0F6 W Bit plane 5 pointer (Low 16 bits) BPL6PTH 0F6 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0F6 W Bit plane 6 pointer (Low 16 bits)  CLXCON 098 W Collision control CLXDAT 00E R Collision data reg. (Read and clear) COCOPILCH 080 W Coprocessor first location reg (Low 16 bits)  COPILCH 084 W Coprocessor first location reg. (Low 16 bits)  COPILCH 086 W Coprocessor second location reg (Low 16 bits)  COPINS 08C W Coprocessor restart at first location COPJMP1 088 S Coprocessor restart at first location DDFSTOP 094 W Display bit plane  data fetch stop (hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                  | BPL2DAT | 112         | W   | Bit plane 2 data                           |  |  |  |
| (Parallel to serial convert)  BPL4DAT 116 W Bit plane 4 data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         |             |     |                                            |  |  |  |
| BPL5DAT 118 W Bit plane 4 data (Parallel to serial convert)  BPL5DAT 118 W Bit plane 5 data (Parallel to serial convert)  BPL6DAT 11A W Bit plane 6 data (Parallel to serial convert)  BPL1PTH 0E0 W Bit plane 1 pointer (High 3 bits)  BPL1PTL 0E2 W Bit plane 2 pointer (Low 16 bits)  BPL2PTH 0E4 W Bit plane 2 pointer (Low 16 bits)  BPL3PTH 0E6 W Bit plane 3 pointer (Low 16 bits)  BPL3PTH 0E8 W Bit plane 3 pointer (High 3 bits)  BPL3PTH 0E0 W Bit plane 3 pointer (High 3 bits)  BPL3PTH 0E0 W Bit plane 4 pointer (High 3 bits)  BPL4PTL 0E0 W Bit plane 4 pointer (High 3 bits)  BPL5PTH 0F0 W Bit plane 5 pointer (High 3 bits)  BPL5PTH 0F0 W Bit plane 5 pointer (High 3 bits)  BPL6PTH 0F1 W Bit plane 5 pointer (High 3 bits)  BPL6PTH 0F2 W Bit plane 6 pointer (High 3 bits)  BPL6PTH 0F2 W Bit plane 6 pointer (Low 16 bits)  BPL6PTL 0F6 W Bit plane 6 pointer (Low 16 bits)  CLXCON 098 W Collision control  CLXCON 098 W Collision control  CLXCON 098 W Collision data reg. (Read and clear)  COLORXX 180 W Coprocessor first location reg  (High 3 bits)  COPILCH 080 W Coprocessor first location reg  (Low 16 bits)  COPILCL 082 W Coprocessor second location reg  (Low 16 bits)  COPILCL 086 W Coprocessor inst. fetch identify  COPJMP1 088 S Coprocessor restart at first location  DDFSTOP 094 W Display bit plane  data fetch stop (hor pos)  DDFSTOT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | BPL3DAT | 114         | W   |                                            |  |  |  |
| (Parallel to serial convert)  BPL5DAT 118 W Bit plane 5 data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         |             |     |                                            |  |  |  |
| BPL5DAT 118 W Bit plane 5 data (Parallel to serial convert)  BPL6DAT 11A W Bit plane 6 data (Parallel to serial convert)  BPL1PTH 0E0 W Bit plane 1 pointer (High 3 bits)  BPL1PTH 0E1 W Bit plane 2 pointer (High 3 bits)  BPL2PTH 0E4 W Bit plane 2 pointer (Low 16 bits)  BPL2PTH 0E6 W Bit plane 3 pointer (Low 16 bits)  BPL3PTH 0E8 W Bit plane 3 pointer (Low 16 bits)  BPL3PTH 0EA W Bit plane 3 pointer (Low 16 bits)  BPL3PTH 0EA W Bit plane 4 pointer (Low 16 bits)  BPL4PTH 0EC W Bit plane 4 pointer (High 3 bits)  BPL4PTH 0EE W Bit plane 4 pointer (High 3 bits)  BPL4PTH 0EO W Bit plane 5 pointer (High 3 bits)  BPL5PTH 0E1 W Bit plane 5 pointer (Low 16 bits)  BPL5PTH 0E2 W Bit plane 5 pointer (Low 16 bits)  BPL6PTH 0E4 W Bit plane 6 pointer (High 3 bits)  BPL6PTH 0E6 W Bit plane 6 pointer (Low 16 bits)  BPL6PTH 0E7 W Bit plane 6 pointer (Low 16 bits)  CLXCON 098 W Collision control  CLXCON 098 W Collision control  CLXCON 098 W Collision data reg. (Read and clear)  COLORXX 180 W Color table xx  (32 WORD ENTRIES, START COLOR 00)  COPILCH 080 W Coprocessor first location reg  (High 3 bits)  COPILCH 084 W Coprocessor second location reg.  (Low 16 bits)  COPILCL 085 W Coprocessor second location reg  (Low 16 bits)  COPINS 08C W Coprocessor second location reg  (Low 16 bits)  COPINS 08C W Coprocessor restart at first location  COPJMP1 088 S Coprocessor restart at first location  COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane  data fetch stop (hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | BPL4DAT | 116         | W   |                                            |  |  |  |
| (Parallel to serial convert)  BPL6DAT 11A W Bit plane 6 data (Parallel to serial convert)  BPL1PTH 0E0 W Bit plane 1 pointer (High 3 bits)  BPL1PTL 0E2 W Bit plane 2 pointer (Low 16 bits)  BPL2PTH 0E4 W Bit plane 2 pointer (High 3 bits)  BPL2PTH 0E6 W Bit plane 3 pointer (Low 16 bits)  BPL3PTH 0E8 W Bit plane 3 pointer (Low 16 bits)  BPL3PTL 0EA W Bit plane 3 pointer (Low 16 bits)  BPL3PTL 0EA W Bit plane 3 pointer (Low 16 bits)  BPL4PTH 0EC W Bit plane 4 pointer (Low 16 bits)  BPL4PTH 0EC W Bit plane 5 pointer (Low 16 bits)  BPL5PTH 0F0 W Bit plane 5 pointer (High 3 bits)  BPL5PTL 0F2 W Bit plane 5 pointer (Low 16 bits)  BPL6PTL 0F2 W Bit plane 6 pointer (Low 16 bits)  BPL6PTL 0F6 W Bit plane 6 pointer (Low 16 bits)  BPL6PTH 0F6 W Bit plane 6 pointer (Low 16 bits)  CLXCON 098 W Collision control  CLXCON 098 W Collision control  CLXCON 180 W Coprocessor first location reg  (High 3 bits)  COP1LCH 080 W Coprocessor first location reg  (Low 16 bits)  COP2LCH 084 W Coprocessor second location reg  (Low 16 bits)  COP2LCL 086 W Coprocessor second location reg  (Low 16 bits)  COPJMP1 088 S Coprocessor restart at first location  COPJMP2 08A S Coprocessor restart at first location  DDFSTOP 094 W Display bit plane  data fetch stop (hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |         |             |     |                                            |  |  |  |
| BPL1PTH 0E0 W Bit plane 1 pointer (High 3 bits) BPL1PTH 0E1 W Bit plane 2 pointer (High 3 bits) BPL1PTH 0E2 W Bit plane 2 pointer (High 3 bits) BPL1PTH 0E4 W Bit plane 2 pointer (High 3 bits) BPL1PTH 0E4 W Bit plane 2 pointer (High 3 bits) BPL1PTH 0E6 W Bit plane 3 pointer (High 3 bits) BPL3PTH 0E8 W Bit plane 3 pointer (Low 16 bits) BPL3PTH 0E0 W Bit plane 4 pointer (High 3 bits) BPL3PTH 0EC W Bit plane 4 pointer (High 3 bits) BPL4PTH 0EC W Bit plane 4 pointer (High 3 bits) BPL5PTH 0E0 W Bit plane 5 pointer (Low 16 bits) BPL5PTH 0E0 W Bit plane 5 pointer (High 3 bits) BPL5PTH 0E1 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0E4 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0E6 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0E7 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0E7 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0E7 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0E7 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0E7 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0E7 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0E7 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0E7 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0E7 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0E8 W Coprocessor first location reg (High 3 bits) COP1LCH 0E0 W Coprocessor first location reg. (High 3 bits) COP2LCH 0E4 W Coprocessor second location reg. (Low 16 bits) COP2LCH 0E0 W Coprocessor restart at first location COPJMP1 0E8 S Coprocessor restart at first location COPJMP1 0E8 S Coprocessor restart at second location DDFSTOP 0E4 W Display bit plane data fetch stop (hor pos) DDFSTRT 0E2 W Bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | BPL5DAT | 118         | W   |                                            |  |  |  |
| (Parallel to serial convert)  BPL1PTH 0E0 W Bit plane 1 pointer (High 3 bits)  BPL1PTL 0E2 W Bit plane 2 pointer (Low 16 bits)  BPL2PTH 0E4 W Bit plane 2 pointer (High 3 bits)  BPL2PTL 0E6 W Bit plane 3 pointer (Low 16 bits)  BPL3PTH 0E8 W Bit plane 3 pointer (Low 16 bits)  BPL3PTH 0E8 W Bit plane 3 pointer (Low 16 bits)  BPL3PTH 0E0 W Bit plane 4 pointer (Low 16 bits)  BPL4PTH 0EC W Bit plane 4 pointer (High 3 bits)  BPL4PTL 0EE W Bit plane 5 pointer (High 3 bits)  BPL5PTH 0F0 W Bit plane 5 pointer (High 3 bits)  BPL5PTH 0F1 W Bit plane 6 pointer (Low 16 bits)  BPL6PTL 0F2 W Bit plane 6 pointer (Low 16 bits)  BPL6PTL 0F6 W Bit plane 6 pointer (Low 16 bits)  BPL6PTL 0F6 W Bit plane 6 pointer (Low 16 bits)  CLXCON 098 W Collision control  CLXDAT 00E R Collision data reg. (Read and clear)  COLORxx 180 W Color table xx  (32 WORD ENTRIES, START COLOR 00)  COP1LCH 080 W Coprocessor first location reg  (High 3 bits)  COP1LCL 082 W Coprocessor first location reg.  (High 3 bits)  COP2LCL 084 W Coprocessor second location reg  (Low 16 bits)  COP2LCL 086 W Coprocessor second location reg  (Low 16 bits)  COPJMP1 088 S Coprocessor restart at first location  COPJMP2 08A S Coprocessor restart at first location  DDFSTOP 094 W Display bit plane  data fetch stop (hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         |             |     |                                            |  |  |  |
| BPL1PTH 0E0 W Bit plane 1 pointer (High 3 bits) BPL1PTL 0E2 W Bit plane 2 pointer (Low 16 bits) BPL2PTH 0E4 W Bit plane 2 pointer (High 3 bits) BPL2PTL 0E6 W Bit plane 2 pointer (Low 16 bits) BPL3PTH 0E8 W Bit plane 3 pointer (High 3 bits) BPL3PTL 0EA W Bit plane 3 pointer (High 3 bits) BPL3PTL 0EA W Bit plane 3 pointer (High 3 bits) BPL4PTH 0EC W Bit plane 4 pointer (High 3 bits) BPL4PTT 0EE W Bit plane 5 pointer (Low 16 bits) BPL5PTH 0F0 W Bit plane 5 pointer (High 3 bits) BPL5PTL 0F2 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F4 W Bit plane 6 pointer (Low 16 bits) BPL6PTL 0F6 W Bit plane 6 pointer (Low 16 bits) BPL6PTL 0F6 W Bit plane 6 pointer (Low 16 bits) BPL6PTL 0F6 W Bit plane 6 pointer (Low 16 bits)  CLXCON 098 W Collision control CLXCON 098 W Collision data reg. (Read and clear) COLORxx 180 W Collision data reg. (Read and clear)  COP1LCH 080 W Coprocessor first location reg  (High 3 bits)  COP1LCL 082 W Coprocessor first location reg.  (Low 16 bits)  COP2LCH 084 W Coprocessor second location reg  (High 3 bits)  COP2LCL 086 W Coprocessor second location reg  (Low 16 bits)  COPJMP1 088 S Coprocessor restart at first location  COPJMP2 08A S Coprocessor restart at first location  DDFSTOP 094 W Display bit plane  data fetch stop (hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | BPL6DAT | 11A         | W   |                                            |  |  |  |
| BPL1PTL 0E2 W Bit plane 1 pointer (Low 16 bits) BPL2PTH 0E4 W Bit plane 2 pointer (High 3 bits) BPL2PTL 0E6 W Bit plane 2 pointer (Low 16 bits) BPL3PTH 0E8 W Bit plane 3 pointer (Low 16 bits) BPL3PTL 0EA W Bit plane 3 pointer (Low 16 bits) BPL3PTL 0EA W Bit plane 4 pointer (High 3 bits) BPL4PTH 0EC W Bit plane 4 pointer (High 3 bits) BPL4PTL 0EE W Bit plane 5 pointer (Low 16 bits) BPL5PTH 0F0 W Bit plane 5 pointer (Low 16 bits) BPL5PTL 0F2 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F4 W Bit plane 6 pointer (Low 16 bits) BPL6PTL 0F6 W Bit plane 6 pointer (Low 16 bits) BPL6PTL 0F6 W Bit plane 6 pointer (Low 16 bits)  CLXCON 098 W Collision control CLXDAT 00E R Collision data reg. (Read and clear) COLORxx 180 W Color table xx  (32 WORD ENTRIES, START COLOR 00)  COP1LCH 080 W Coprocessor first location reg  (High 3 bits)  COP1LCL 082 W Coprocessor first location reg.  (Low 16 bits)  COP2LCH 084 W Coprocessor second location reg.  (High 3 bits)  COP2LCL 086 W Coprocessor second location reg.  (Low 16 bits)  COPINS 08C W Coprocessor inst. fetch identify COPJMP1 088 S Coprocessor restart at first location COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane  data fetch stop (hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |         |             |     | (Parallel to serial convert)               |  |  |  |
| BPL2PTH 0E4 W Bit plane 2 pointer (High 3 bits) BPL2PTL 0E6 W Bit plane 3 pointer (Low 16 bits) BPL3PTH 0E8 W Bit plane 3 pointer (High 3 bits) BPL3PTH 0E8 W Bit plane 3 pointer (High 3 bits) BPL3PTH 0EC W Bit plane 4 pointer (Low 16 bits) BPL4PTH 0EC W Bit plane 4 pointer (Low 16 bits) BPL4PTL 0EE W Bit plane 5 pointer (Low 16 bits) BPL5PTH 0F0 W Bit plane 5 pointer (High 3 bits) BPL5PTH 0F2 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0F4 W Bit plane 6 pointer (High 3 bits) BPL6PTH 0F6 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0F6 W Bit plane 6 pointer (Low 16 bits) CLXCON 098 W Collision control CLXDAT 00E R Collision data reg. (Read and clear) COLORxx 180 W Color table xx (32 WORD ENTRIES, START COLOR 00) COP1LCH 080 W Coprocessor first location reg (High 3 bits) COP2LCH 084 W Coprocessor second location reg. (Low 16 bits)  COP2LCH 084 W Coprocessor second location reg (High 3 bits) COP2LCL 086 W Coprocessor second location reg (Low 16 bits) COPJMP1 088 S Coprocessor inst. fetch identify COPJMP1 088 S Coprocessor restart at first location COPJMP2 08A S Coprocessor restart at second location DDFSTOP 094 W Display bit plane data fetch stop (hor pos) DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |         |             |     |                                            |  |  |  |
| BPL2PTL 0E6 W Bit plane 2 pointer (Low 16 bits) BPL3PTH 0E8 W Bit plane 3 pointer (High 3 bits) BPL3PTL 0EA W Bit plane 3 pointer (Low 16 bits) BPL4PTH 0EC W Bit plane 4 pointer (High 3 bits) BPL4PTL 0EE W Bit plane 4 pointer (High 3 bits) BPL4PTL 0EE W Bit plane 5 pointer (High 3 bits) BPL5PTH 0F0 W Bit plane 5 pointer (Low 16 bits) BPL5PTL 0F2 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0F4 W Bit plane 6 pointer (High 3 bits) BPL6PTL 0F6 W Bit plane 6 pointer (Low 16 bits)  CLXCON 098 W Collision control CLXDAT 00E R Collision data reg. (Read and clear) COLORxx 180 W Color table xx (32 WORD ENTRIES, START COLOR 00)  COP1LCH 080 W Coprocessor first location reg (High 3 bits)  COP1LCL 082 W Coprocessor secnd location reg. (Low 16 bits)  COP2LCL 086 W Coprocessor secnd location reg (Low 16 bits)  COP1NS 08C W Coprocessor inst. fetch identify COPJMP1 088 S Coprocessor restart at first location COPJMP2 08A S Coprocessor restart at second location DDFSTOP 094 W Display bit plane data fetch stop (hor pos) DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |             |     |                                            |  |  |  |
| BPL3PTH 0E8 W Bit plane 3 pointer (High 3 bits) BPL3PTL 0EA W Bit plane 3 pointer (Low 16 bits) BPL4PTH 0EC W Bit plane 4 pointer (High 3 bits) BPL4PTL 0EE W Bit plane 4 pointer (Low 16 bits) BPL4PTL 0EE W Bit plane 5 pointer (Low 16 bits) BPL5PTH 0F0 W Bit plane 5 pointer (Low 16 bits) BPL5PTL 0F2 W Bit plane 5 pointer (Low 16 bits) BPL6PTH 0F4 W Bit plane 6 pointer (High 3 bits) BPL6PTL 0F6 W Bit plane 6 pointer (Low 16 bits)  CLXCON 098 W Collision control CLXDAT 00E R Collision data reg. (Read and clear) COLORxx 180 W Color table xx (32 WORD ENTRIES, START COLOR 00)  COP1LCH 080 W Coprocessor first location reg (High 3 bits)  COP1LCL 082 W Coprocessor first location reg. (Low 16 bits)  COP2LCH 084 W Coprocessor secnd location reg. (High 3 bits)  COP2LCL 086 W Coprocessor secnd location reg. (Low 16 bits)  COPJMP1 088 S Coprocessor restart at first location COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane data fetch stop (hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |         |             |     |                                            |  |  |  |
| BPL3PTL 0EA W Bit plane 3 pointer (Low 16 bits) BPL4PTH 0EC W Bit plane 4 pointer (High 3 bits) BPL4PTL 0EE W Bit plane 5 pointer (Low 16 bits) BPL5PTH 0F0 W Bit plane 5 pointer (High 3 bits) BPL5PTL 0F2 W Bit plane 6 pointer (Low 16 bits) BPL6PTH 0F4 W Bit plane 6 pointer (High 3 bits) BPL6PTL 0F6 W Bit plane 6 pointer (Low 16 bits)  CLXCON 098 W Collision control CLXCON 098 W Collision data reg. (Read and clear) COLORXX 180 W Color table xx (32 WORD ENTRIES, START COLOR 00)  COP1LCH 080 W Coprocessor first location reg (High 3 bits)  COP2LCH 084 W Coprocessor first location reg. (Low 16 bits)  COP2LCL 086 W Coprocessor second location reg (High 3 bits)  COP2LCL 086 W Coprocessor second location reg (Low 16 bits)  COPJMP1 088 S Coprocessor inst. fetch identify COPJMP1 088 S Coprocessor restart at first location COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane data fetch stop (hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |             |     |                                            |  |  |  |
| BPL4PTH OEC W Bit plane 4 pointer (High 3 bits) BPL4PTL OEE W Bit plane 4 pointer (Low 16 bits) BPL5PTH OFO W Bit plane 5 pointer (High 3 bits) BPL5PTL OF2 W Bit plane 5 pointer (Low 16 bits) BPL6PTH OF4 W Bit plane 6 pointer (Low 16 bits) BPL6PTL OF6 W Bit plane 6 pointer (Low 16 bits) BPL6PTL OF6 W Bit plane 6 pointer (Low 16 bits)  CLXCON O98 W Collision control CLXDAT OOE R Collision data reg. (Read and clear) COLORxx 180 W Color table xx (32 WORD ENTRIES, START COLOR 00)  COP1LCH O80 W Coprocessor first location reg (High 3 bits)  COP1LCL O82 W Coprocessor first location reg. (Low 16 bits)  COP2LCH O84 W Coprocessor second location reg (High 3 bits)  COP2LCL O86 W Coprocessor second location reg (Low 16 bits)  COPINS O8C W Coprocessor inst. fetch identify COPJMP1 O88 S Coprocessor restart at first location COPJMP2 O8A S Coprocessor restart at second location  DDFSTOP O94 W Display bit plane data fetch stop (hor pos)  DDFSTRT O92 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |             |     | Bit plane 3 pointer (High 3 bits)          |  |  |  |
| BPL4PTL 0EE W Bit plane 4 pointer (Low 16 bits) BPL5PTH 0F0 W Bit plane 5 pointer (High 3 bits) BPL5PTL 0F2 W Bit plane 5 pointer (Low 16 bits) BPL6PTH 0F4 W Bit plane 6 pointer (High 3 bits) BPL6PTL 0F6 W Bit plane 6 pointer (Low 16 bits)  CLXCON 098 W Collision control CLXCON 098 W Collision data reg. (Read and clear) COLORXX 180 W Color table xx (32 WORD ENTRIES, START COLOR 00)  COPILCH 080 W Coprocessor first location reg (High 3 bits)  COPILCL 082 W Coprocessor first location reg. (Low 16 bits)  COP2LCH 084 W Coprocessor second location reg (High 3 bits)  COP2LCL 086 W Coprocessor second location reg (Low 16 bits)  COPJMP1 088 S Coprocessor inst. fetch identify  COPJMP1 088 S Coprocessor restart at first location  COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane data fetch stop (hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |         |             |     |                                            |  |  |  |
| BPL5PTH 0F0 W Bit plane 5 pointer (High 3 bits) BPL5PTL 0F2 W Bit plane 5 pointer (Low 16 bits) BPL6PTH 0F4 W Bit plane 6 pointer (High 3 bits) BPL6PTL 0F6 W Bit plane 6 pointer (Low 16 bits)  CLXCON 098 W Collision control CLXDAT 00E R Collision data reg. (Read and clear) COLORxx 180 W Color table xx (32 WORD ENTRIES, START COLOR 00)  COPILCH 080 W Coprocessor first location reg (High 3 bits)  COPILCL 082 W Coprocessor first location reg. (Low 16 bits)  COP2LCH 084 W Coprocessor second location reg (High 3 bits)  COP2LCL 086 W Coprocessor second location reg (Low 16 bits)  COPINS 08C W Coprocessor inst. fetch identify COPJMP1 088 S Coprocessor restart at first location COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane data fetch stop (hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |             |     |                                            |  |  |  |
| BPL5PTL 0F2 W Bit plane 5 pointer (Low 16 bits) BPL6PTH 0F4 W Bit plane 6 pointer (High 3 bits) BPL6PTL 0F6 W Bit plane 6 pointer (Low 16 bits)  CLXCON 098 W Collision control CLXDAT 00E R Collision data reg. (Read and clear) COLORxx 180 W Color table xx (32 WORD ENTRIES, START COLOR 00)  COPILCH 080 W Coprocessor first location reg (High 3 bits)  COPILCL 082 W Coprocessor first location reg. (Low 16 bits)  COP2LCH 084 W Coprocessor second location reg. (High 3 bits)  COP2LCL 086 W Coprocessor second location reg (Low 16 bits)  COPJMP1 088 S Coprocessor inst. fetch identify COPJMP1 088 S Coprocessor restart at first location COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane data fetch stop (hor pos) DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |             |     |                                            |  |  |  |
| BPL6PTH 0F4 W Bit plane 6 pointer (High 3 bits) BPL6PTL 0F6 W Bit plane 6 pointer (Low 16 bits)  CLXCON 098 W Collision control CLXDAT 00E R Collision data reg. (Read and clear) COLORXX 180 W Color table xx (32 WORD ENTRIES, START COLOR 00)  COP1LCH 080 W Coprocessor first location reg (High 3 bits)  COP1LCL 082 W Coprocessor first location reg. (Low 16 bits)  COP2LCH 084 W Coprocessor second location reg. (High 3 bits)  COP2LCL 086 W Coprocessor second location reg (Low 16 bits)  COP1NS 08C W Coprocessor inst. fetch identify COPJMP1 088 S Coprocessor restart at first location COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane data fetch stop(hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |             |     |                                            |  |  |  |
| BPL6PTL 0F6 W Bit plane 6 pointer (Low 16 bits)  CLXCON 098 W Collision control CLXDAT 00E R Collision data reg. (Read and clear) COLORXX 180 W Color table xx (32 WORD ENTRIES, START COLOR 00)  COP1LCH 080 W Coprocessor first location reg (High 3 bits)  COP1LCL 082 W Coprocessor first location reg. (Low 16 bits)  COP2LCH 084 W Coprocessor second location reg. (High 3 bits)  COP2LCL 086 W Coprocessor second location reg (Low 16 bits)  COP1NS 08C W Coprocessor inst. fetch identify COPJMP1 088 S Coprocessor restart at first location COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane data fetch stop(hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |             |     |                                            |  |  |  |
| CLXCON 098 W Collision control CLXDAT 00E R Collision data reg. (Read and clear) COLORxx 180 W Color table xx                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         |             |     |                                            |  |  |  |
| CLXDAT 00E R Collision data reg. (Read and clear)  COLORxx 180 W Color table xx  (32 WORD ENTRIES, START COLOR 00)  COPILCH 080 W Coprocessor first location reg  (High 3 bits)  COPILCL 082 W Coprocessor first location reg.  (Low 16 bits)  COP2LCH 084 W Coprocessor secnd location reg.  (High 3 bits)  COP2LCL 086 W Coprocessor second location reg.  (Low 16 bits)  COPINS 08C W Coprocessor inst. fetch identify  COPJMP1 088 S Coprocessor restart at first location  COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane  data fetch stop (hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | DPLOPIL | 010         | W   | Bit plane 6 pointer (Low 16 bits)          |  |  |  |
| COLORxx 180 W Color table xx (32 WORD ENTRIES, START COLOR 00)  COPILCH 080 W Coprocessor first location reg (High 3 bits)  COPILCL 082 W Coprocessor first location reg. (Low 16 bits)  COP2LCH 084 W Coprocessor secnd location reg. (High 3 bits)  COP2LCL 086 W Coprocessor second location reg (Low 16 bits)  COPINS 08C W Coprocessor inst. fetch identify  COPJMP1 088 S Coprocessor restart at first location  COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane data fetch stop(hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |         | 098         | W   | Collision control                          |  |  |  |
| COPILCH 080 W Coprocessor first location reg (High 3 bits)  COPILCL 082 W Coprocessor first location reg. (Low 16 bits)  COP2LCH 084 W Coprocessor secnd location reg. (High 3 bits)  COP2LCL 086 W Coprocessor second location reg. (Low 16 bits)  COPINS 08C W Coprocessor inst. fetch identify  COPJMP1 088 S Coprocessor restart at first location  COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane data fetch stop(hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |             | R   | Collision data reg. (Read and clear)       |  |  |  |
| COPILCH 080 W Coprocessor first location reg (High 3 bits)  COPILCL 082 W Coprocessor first location reg. (Low 16 bits)  COPILCH 084 W Coprocessor secnd location reg. (High 3 bits)  COPILCL 086 W Coprocessor second location reg (Low 16 bits)  COPINS 08C W Coprocessor inst. fetch identify  COPJMP1 088 S Coprocessor restart at first location  COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane data fetch stop(hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | COLORxx | 180         | W   |                                            |  |  |  |
| COP1LCL 082 W Coprocessor first location reg.  (Low 16 bits)  COP2LCH 084 W Coprocessor secnd location reg.  (High 3 bits)  COP2LCL 086 W Coprocessor second location reg.  (Low 16 bits)  COPINS 08C W Coprocessor inst. fetch identify  COPJMP1 088 S Coprocessor restart at first location  COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane  data fetch stop(hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |         |             |     | (32 WORD ENTRIES, START COLOR 00)          |  |  |  |
| COPILCL 082 W Coprocessor first location reg.  (Low 16 bits)  COP2LCH 084 W Coprocessor second location reg.  (High 3 bits)  COP2LCL 086 W Coprocessor second location reg  (Low 16 bits)  COPINS 08C W Coprocessor inst. fetch identify  COPJMP1 088 S Coprocessor restart at first location  COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane  data fetch stop(hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | COP1LCH | 080         | W   |                                            |  |  |  |
| (Low 16 bits)  COP2LCH 084 W Coprocessor secnd location reg.  (High 3 bits)  COP2LCL 086 W Coprocessor second location reg  (Low 16 bits)  COPINS 08C W Coprocessor inst. fetch identify  COPJMP1 088 S Coprocessor restart at first location  COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane  data fetch stop(hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |         |             |     | (High 3 bits)                              |  |  |  |
| COP2LCH 084 W Coprocessor secnd location reg.  (High 3 bits)  COP2LCL 086 W Coprocessor second location reg  (Low 16 bits)  COPINS 08C W Coprocessor inst. fetch identify  COPJMP1 088 S Coprocessor restart at first location  COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane  data fetch stop(hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | COP1LCL | 082         | W   |                                            |  |  |  |
| (High 3 bits)  COP2LCL 086 W Coprocessor second location reg (Low 16 bits)  COPINS 08C W Coprocessor inst. fetch identify  COPJMP1 088 S Coprocessor restart at first location  COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane data fetch stop(hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |         |             |     |                                            |  |  |  |
| COP2LCL 086 W Coprocessor second location reg (Low 16 bits)  COPINS 08C W Coprocessor inst. fetch identify COPJMP1 088 S Coprocessor restart at first location COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane data fetch stop(hor pos) DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | COP2LCH | 084         | W   |                                            |  |  |  |
| (Low 16 bits)  COPINS 08C W Coprocessor inst. fetch identify  COPJMP1 088 S Coprocessor restart at first location  COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane  data fetch stop(hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |         |             |     | (High 3 bits)                              |  |  |  |
| COPINS 08C W Coprocessor inst. fetch identify COPJMP1 088 S Coprocessor restart at first location COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane data fetch stop(hor pos) DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | COP2LCL | 086         | W   |                                            |  |  |  |
| COPJMP1 088 S Coprocessor restart at first location COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane data fetch stop(hor pos) DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |         |             |     |                                            |  |  |  |
| COPJMP2 08A S Coprocessor restart at second location  DDFSTOP 094 W Display bit plane data fetch stop(hor pos)  DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |         |             |     |                                            |  |  |  |
| DDFSTOP 094 W Display bit plane data fetch stop(hor pos) DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |             |     |                                            |  |  |  |
| data fetch stop(hor pos) DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | COPJMP2 | <b>A</b> 80 | S   | Coprocessor restart at second location     |  |  |  |
| data fetch stop(hor pos) DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | DDFSTOP | 094         | W   | Display bit plane                          |  |  |  |
| DDFSTRT 092 W Display bit plane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |         | <b>771</b>  | ••  |                                            |  |  |  |
| - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | DDFSTRT | 092         | W   |                                            |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |         |             |     | data fetch start (hor pos)                 |  |  |  |

| NAME              | OFFSET     | R/W    | EXPLANATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |
|-------------------|------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| DIWSTOP           | 090        | W      | Disp Window Stop                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |
| DIWSTRT           | 08E        | W      | (lower right vert-hor pos) Disp Window Start                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  |  |
|                   |            |        | (upper left vert-hor pos)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
| DMACON<br>DMACONR | 096<br>002 | W<br>R | DMA control write (clear or set) DMA control (and blitter status) read                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |  |  |
|                   |            |        | ·                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |  |
| DSKBYTR<br>DSKDAT | 01A        | R      | Disk Data byte and status read                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |  |  |
|                   | 026        | W      | Disk DMA Data write                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |
| DSKDATR           | 800        | ER     | Disk DMA Data read (early read dummy address)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |
| DSKLEN            | 024        | W      | Disk length                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |
| DSKPTH            | 020        | W      | Disk pointer (High 3 bits)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |
| DSKPTL            | 022        | W      | Disk pointer (Low 16 bits)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |
| INTENA            | 09A        | W      | Interrupt Enable bits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |
| INTENAR           | 01C        | R      | (clear or set bits)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |
| INTREQ            |            | W      | Interrupt Enable bits Read                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |
| INTREOR           |            | R      | Interrupt Request bits (clear or set)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |
| INIKEQK           | OIE        | K      | Interrupt request bits (read)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |
| JOY0DAT           | 00A        | R      | Joystick-mouse 0 data (vert, horiz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |
| JOY1DAT           | 00C        | R      | Joystick-mouse 1 data (vert, horiz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |
| POTODAT           | 012        | R      | Pot counter data left pair                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |
| POT1DAT           | 014        | R      | (vert, horiz) Pot counter data right pair                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
| POTGO             | 034        | W      | (vert, horiz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |
| POTINP            |            |        | Pot Port (4 bit) Direction and Data,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |  |
|                   |            | K      | Pot pin data read                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |  |
| REFPTR            |            | W      | Refresh pointer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |
| SERDAT            | 030        | W      | Serial Port Data and stop bits write                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |  |
| SERDATR           | 018        | R      | Serial Port Data and Status read                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |
| SERPER            | 032        | W      | Serial Port Period and control                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |  |  |
| SPR0POS           | 140        | W      | Sprite 0 Vert-Horiz start position data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |  |
| SPR0CTL           | 142        | W      | Sprite 0 Vert stop position and control data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  |  |
| SPRODATA          | 144        | W      | Sprite 0 image data register A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |  |  |
| SPRODATB          |            | W      | Sprite 0 image data made to a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |
| SPR1POS           |            | W      | Sprite 0 image data register B<br>Sprite 1 Vert-Horiz start                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |
|                   |            |        | position data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |
| SPR1CTL           | 14A        | W      | Sprite 1 Vert stop position and control data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  |  |
| SPR1DATA          | 14C        | W      | Sprite 1 image data register A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |  |  |
| SPR1DATB          |            | W      | Sprite 1 image data register A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |  |  |
|                   |            |        | The second of th |  |  |  |  |

| NAME     | OFFSET | R/W | EXPLANATION                                                 |
|----------|--------|-----|-------------------------------------------------------------|
| SPR2POS  | 150    | W   | Sprite 2 Vert-Horiz start position data                     |
| SPR2CTL  | 152    | W   | Sprite 2 Vert stop position and control data                |
| SPR2DATA | 154    | W   | Sprite 2 image data register A                              |
| SPR2DATB |        | W   | Sprite 2 image data register B                              |
| SPR3POS  | 158    | W   | Sprite 3 Vert-Horiz start position data                     |
| SPR3CTL  | 15A    | W   | Sprite 3 Vert stop position and control data                |
| SPR3DATA | 15C    | W   | Sprite 3 image data register A                              |
| SPR3DATB |        | W   | Sprite 3 image data register B                              |
| SPR4POS  | 160    | W   | Sprite 4 Vert-Horiz start                                   |
| SPR4CTL  | 162    | W   | position data Sprite 4 Vert stop position and control data  |
| SPR4DATA | 164    | W   | Sprite 4 image data register A                              |
| SPR4DATB |        | W   | Sprite R image data register B                              |
| SPR5POS  | , 168  | W   | Sprite 5 Vert-Horiz start position data                     |
| SPR5CTL  | 16A    | W   | Sprite 5 Vert stop position and control data                |
| SPR5DATA | 16C    | W   | Sprite 5 image data register A                              |
| SPR5DATB | 16E    | W   | Sprite 5 image data register B                              |
| SPR6POS  | 170    | W   | Sprite 6 Vert-Horiz start position data                     |
| SPR6CTL  | 172    | W   | Sprite 6 Vert stop position and control data                |
| SPR6DATA | 174    | W   | Sprite 6 image data register A                              |
| SPR6DATB |        | W   | Sprite 6 image data register B                              |
| SPR7POS  | 178    | W   | Sprite 7 Vert-Horiz start                                   |
| SPR7CTL  | 17A    | W   | position data  Sprite 7 Vert stop position and control data |
| SPR7DATA | 17C    | W   | Sprite 7 image data register A                              |
| SPR7DATB |        | W   | Sprite 7 image data register B                              |
| SPR0PTH  | 120    | W   | Sprite 0 pointer (High 3 bits)                              |
| SPROPTL  | 122    | W   | Sprite 0 pointer (Low 16 bits)                              |
| SPR1PTH  | 124    | W   | Sprite 1 pointer (High 3 bits)                              |
| SPR1PTL  | 126    | W   | Sprite 1 pointer (Low 16 bits)                              |
| SPR2PTH  | 128    | W   | Sprite 2 pointer (High 3 bits)                              |
| SPR2PTL  | 12A    | W   | Sprite 2 pointer (Low 16 bits)                              |
| SPR3PTH  | 12C    | W   | Sprite 3 pointer (High 3 bits)                              |
| SPR3PTL  | 12E    | W   | Sprite 3 pointer (Low 16 bits)                              |
| SPR4PTH  | 130    | W   | Sprite 4 pointer (High 3 bits)                              |
| SPR4PTL  | 132    | W   | Sprite 4 pointer (Low 16 bits)                              |
| SPR5PTH  | 134    | W   | Sprite 5 pointer (High 3 bits)                              |
| SPR5PTL  | 136    | W   | Sprite 5 pointer (Low 16 bits)                              |
| SPR6PTH  | 138    | W   | Sprite 6 pointer (High 3 bits)                              |
| SPR6PTL  | 13A    | W   | Sprite 6 pointer (Low 16 bits)                              |
| SPR7PTH  | 13C    | W   | Sprite 7 pointer (High 3 bits)                              |
| SPR7PTL  | 13E    | W   | Sprite 7 pointer (Low 16 bits)                              |

| NAME    | OFFSET      | R/W | EXPLANATION                           |  |  |
|---------|-------------|-----|---------------------------------------|--|--|
|         |             |     |                                       |  |  |
| STREQU  | 038         | S   | Strobe for horiz sync with VB and EQU |  |  |
| STRHOR  | 03C         | S   | Strobe for horiz sync                 |  |  |
| STRLONG | 03E         | S   | Strobe for identification of          |  |  |
|         |             |     | long horzontal line.                  |  |  |
| STRVBL  | 03 <b>A</b> | S   | Strobe for horiz sync                 |  |  |
|         |             |     | with VB (Vert. Blank)                 |  |  |
| VHPOSR  | 004         | R   | Read Vert and horiz Position of beam  |  |  |
| VHPOSW  | 02A         | W   | Write Vert and horiz Position of beam |  |  |
| VPOSR   | 006         | R   | Read Vert most sig. bit               |  |  |
|         |             |     | (and frame flop)                      |  |  |
| VPOSW   | 02C         | W   | Write Vert most sig. bit              |  |  |
|         |             |     | (and frame flop)                      |  |  |

The following listing of the chip special purpose addresses is provided in numerical order by chip address for the convenience of software developers who may prefer this ordering sequence.

```
DMACONR
                    DMA control (and blitter status) read
           002
VHPOSR
           004 R
                    Read Vert and horiz Position of beam
VPOSR
           006 R
                    Read Vert most sig. bit (and frame flop)
DSKDATR
           008 ER
                    Disk DMA Data read (early read dummy address)
           00A R
JOY0DAT
                    Joystick-mouse 0 data (vert, horiz)
JOY1DAT
           00C
               R
                    Joystick-mouse 1 data (vert, horiz)
CLXDAT
           00E R
                    Collision data reg. (Read and clear)
ADKCONR
           010
                    Audio, disk, Control read
                    Pot counter data left pair (vert, horiz)
POTODAT
           012 R
POT1DAT
           014 R
                    Pot counter data right pair (vert, horiz)
POTINP
           016 R
                    Pot pin data read
SERDATR
           018 R
                    Serial Port Data and Status read
DSKBYTR
           01A R
                    Disk Data byte and status read
INTENAR
           01C R
                    Interrupt Enable bits Read
INTREOR
           01E R
                    Interrupt request bits (read)
DSKPTH
           020 W
                    Disk pointer (High 3 bits)
DSKPTL
           022 W
                    Disk pointer (Low 16 bits)
DSKLEN
           024 W
                    Disk length
DSKDAT
           026 W
                    Disk DMA Data write
REFPTR
           028 W
                    Refresh pointer
VHPOSW
           02A W
                    Write Vert and horiz Position of beam
VPOSW
           02C W
                    Write Vert most sig. bit (and frame flop)
SERDAT
           030 W
                    Serial Port Data and stop bits write
SERPER
           032 W
                    Serial Port Period and control
POTGO
           034 W
                    Pot Port (4 bit) Direction and Data,
           038 S
                    Strobe for horiz sync with VB and EQU
STREQU
STRVBL
           03A S
                    Strobe for horiz sync with VB (Vert. Blank)
STRHOR
           03C S
                    Strobe for horiz sync
STRLONG
                    Strobe for ident. of long horzontal line.
           03E S
BLTCONO
           040 W
                    Blitter control register 0
BLTCON1
           042 W
                    Blitter control register 1
BLTAFWM
           044 W
                    Blitter first word mask for source A
BLTALWM
           046 W
                    Blitter last word mask for source A
BLTCPTH
                   Blitter Pointer to src or dst.C (High 3 bits)
           048 W
```

```
BLTCPTL
           04A
                W
                    Blitter Pointer C (Low 16 bits)
BLTBPTH
           04C
                W
                    Blitter Pointer to src or dst.B (High 3 bits)
                    Blitter Pointer B (Low 16 bits)
BLTBPTL
           04E W
BLTAPTH
           050 W
                    Blitter Pointer to src or dst.A (High 3 bits)
                    Blitter Pointer A (Low 16 bits)
BLTAPTL
           052 W
           054 W
                    Blitter Pointer to src or dst.D (High 3 bits)
BLTDPTH
               W
                    Blitter Pointer D (Low 16 bits)
           056
BLTDPTL
                    Blitter start and size (window width, height)
BLTSIZE
           058
                W
                    Blitter Modulo C
BLTCMOD
           060
                W
                    Blitter Modulo B
BLTBMOD
           062
                W
BLTAMOD
           064 W
                    Blitter Modulo A
BLTDMOD
           066
                W
                     Blitter Modulo D
BLTCDAT
           070
                W
                     Blitter source C data req
                     Blitter source B data reg
BLTBDAT
           072
                W
           074
BLTADAT
                W
                     Blitter source A data req
COP1LCH
           080
                W
                     Coprocessor first location reg (High 3 bits)
COP1LCL
           082
                W
                     Coprocessor first location reg. (Low 16 bits)
           084 W
COP 2LCH
                     Coprocessor secnd location reg. (High 3 bits)
                     Coprocessor second location reg (low 16 bits)
COP2LCL
           086
               W
COPJMP1
           088 S
                     Coprocessor restart at first location
COPJMP2
           08A S
                     Coprocessor restart at second location
                    Coprocessor inst. fetch identify
Disp Window Start (upper left vert-hor pos)
COPINS
           08C
                W
DIWSTRT
           08E W
                W
                     Disp Window Stop (lower right vert-hor pos)
DIWSTOP
           090
                W
DDFSTRT
           092
                     Display bit plane data fetch start (hor pos)
           094
                W
DDFSTOP
                     Display bit plane data fetch stop (hor pos)
           096
                W
DMACON
                     DMA control write (clear or set)
CLXCON
           098
                W
                     Collision control
INTENA
           09A W
                     Interrupt Enable bits (clear or set bits)
           09C
INTREQ
                W
                     Interrupt Request bits (clear or set)
           09E
ADKCON
                W
                     Audio, Disk, Control write
AUD0LCH
           0A0
                     Audio channel 0 location (High 3 bits)
                W
AUDOLCL
           0A2 W
                     Audio channel 0 location (Low 16 bits)
AUDOLEN
           0A4 W
                     Audio Channel 0 length
AUD0PER
           0A6 W
                     Audio channel 0 Period
AUD0VOL
           W 8A0
                     Audio Channel 0 Volume
           OAA W
AUD0DAT
                     Audio channel 0 Data
                     Audio channel 1 location (High 3 bits)
AUD1LCH
           0B0
                W
AUD1LCL
           0B2 W
                     Audio channel 1 location (Low 16 bits)
AUD1LEN
           0B4
                W
                     Audio Channel 1 length
AUD1PER
           0B6
                W
                     Audio channel 1 Period
AUD1VOL
           0B8 W
                     Audio Channel 1 Volume
                     Audio channel 1 Data
AUD1DAT
           0BA
                W
AUD2LCH
           0C0
                W
                     Audio channel 2 location (High 3 bits)
AUD2LCL
           OC2
                W
                     Audio channel 2 location (Low 16 bits)
           0C4 W
AUD2LEN
                     Audio Channel 2 length
AUD2PER
           0C6 W
                     Audio channel 2 Period
           0C8 W
AUD2VOL
                     Audio Channel 2 Volume
           OCA W
                     Audio channel 2 Data
AUD2DAT
                     Audio channel 3 location (High 3 bits)
Audio channel 3 location (Low 16 bits)
AUD3LCH
           0D0
                W
AUD3LCL
            0D2
                W
AUD3LEN
            0D4
                W
                     Audio Channel 3 length
AUD3PER
            0D6
                W
                     Audio channel 3 Period
AUD3VOL
            0D8 W
                     Audio Channel 3 Volume
                     Audio channel 3 Data
AUD3DAT
            ODA W
                     Bit plane 1 pointer (High 3 bits)
BPL1PTH
            OEO W
```

```
BPL1PTL
             0E2
                  W
                       Bit plane 1 pointer (Low 16 bits)
                      Bit plane 2 pointer (High 3 bits)
Bit plane 2 pointer (Low 16 bits)
Bit plane 3 pointer (High 3 bits)
Bit plane 3 pointer (Low 16 bits)
Bit plane 3 pointer (Low 16 bits)
BPL2PTH
             0E4
                  W
BPL2PTL
             0E6
                  W
BPL3PTH
             0E8
                  W
BPL3PTL
             0EA
                  W
                       Bit plane 4 pointer (High 3 bits)
BPL4PTH
             0EC
                  W
BPL4PTL
                       Bit plane 4 pointer (Low 16 bits)
             0EE
                 W
BPL5PTH
             OF0
                       Bit plane 5 pointer (High 3 bits)
                 W
                      Bit plane 5 pointer (Low 16 bits)
Bit plane 6 pointer (High 3 bits)
Bit plane 6 pointer (Low 16 bits)
BPL5PTL
             0F2
                 W
BPL6PTH
             OF4 W
BPL6PTL
             OF6 W
BPLCON0
             100 W
                      Bit plane control reg. (misc control bits)
BPLCON1
             102
                 W
                      Bit plane control reg. (priority control)
BPLCON2
             104
                      Bit Plane control reg. (horiz scroll control)
                 W
BPL1MOD
             108
                 W
                       Bit plane modulo (odd planes)
BPL2MOD
                       Bit Plane modulo (even planes)
            10A
                 W
                      Bit plane 1 data (Parallel to serial convert)
BPL1DAT
            110
                 W
                      Bit plane 2 data (Parallel to serial convert)
BPL2DAT
            112
                 W
BPL3DAT
            114
                  W
                       Bit plane 3 data (Parallel to serial convert)
BPL4DAT
            116
                  W
                       Bit plane 4 data (Parallel to serial convert)
BPL5DAT
            118
                       Bit plane 5 data (Parallel to serial convert)
                  W
BPL6DAT
                      Bit plane 6 data (Parallel to serial convert)
            11A
                  W
SPR0PTH
            120
                 W
                      Sprite 0 pointer (High 3 bits)
SPROPTL
            122
                      Sprite 0 pointer (Low 16 bits)
                 W
                      Sprite 1 pointer (High 3 bits)
Sprite 1 pointer (Low 16 bits)
SPR1PTH
            124 W
SPR1PTL
            126 W
SPR2PTH
            128 W
                      Sprite 2 pointer (High 3 bits)
SPR2PTL
            12A W
                      Sprite 2 pointer (Low 16 bits)
SPR3PTH
            12C
                 W
                      Sprite 3 pointer (High 3 bits)
SPR3PTL
            12E
                      Sprite 3 pointer (Low 16 bits)
                 W
SPR4PTH
            130
                 W
                      Sprite 4 pointer (High 3 bits)
SPR4PTL
                      Sprite 4 pointer (Low 16 bits)
Sprite 5 pointer (High 3 bits)
            132
                 W
SPR5PTH
            134
                 W
            136
SPR5PTL
                      Sprite 5 pointer (Low 16 bits)
                 W
SPR6PTH
            138 W
                      Sprite 6 pointer (High 3 bits)
SPR6PTL
            13A
                 W
                      Sprite 6 pointer (Low 16 bits)
SPR7PTH
            13C
                 W
                      Sprite 7 pointer (High 3 bits)
SPR7PTL
                      Sprite 7 pointer (Low 16 bits)
            13E
                 W
SPR0PQS
                      Sprite 0 Vert-Horiz start position data
            140
                 W
SPR0CTL
                      Sprite 0 Vert stop position and control data
            142
SPRODATA
            144
                 W
                      Sprite 0 image data register A
SPRODATB
            146
                 W
                      Sprite 0 image data register B
SPR1POS
                      Sprite 1 Vert-Horiz start position data
            148
SPR1CTL
                      Sprite 1 Vert stop position and control data
            14A W
SPR1DATA
                      Sprite 1 image data register A
            14C
                 W
SPR1DATB
            14E W
                      Sprite 1 image data register B
                      Sprite 2 Vert-Horiz start position data
SPR2POS
            150
                 W
                      Sprite 2 Vert stop position and control data
SPR2CTL
            152
                 W
SPR2DATA
            154 W
                      Sprite 2 image data register A
SPR2DATB
            156
                 W
                      Sprite 2 image data register B
SPR3POS
            158 W
                      Sprite 3 Vert-Horiz start position data
SPR3CTL
            15A W
                      Sprite 3 Vert stop position and control data
SPR3DATA
            15C
                      Sprite 3 image data register A
                 W
SPR3DATB
            15E
                 W
                      Sprite 3 image data register B
SPR4POS
                      Sprite 4 Vert-Horiz start position data
            160 W
SPR4CTL
            162 W
                      Sprite 4 Vert stop position and control data
```

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| SPR4DATA | 164 | W | Sprite 4 image data register A                   |
|----------|-----|---|--------------------------------------------------|
| SPR4DATB | 166 | W | Sprite 4 image data register B                   |
| SPR5POS  | 168 | W | Sprite 5 Vert-Horiz start position data          |
| SPR5CTL  | 16A | W | Sprite 5 Vert stop position and control data     |
| SPR5DATA | 16C | W | Sprite 5 image data register A                   |
| SPR5DATB | 16E | W | Sprite 5 image data register B                   |
| SPR6POS  | 170 | W | Sprite 6 Vert-Horiz start position data          |
| SPR6CTL  | 172 | W | Sprite 6 Vert stop position and control data     |
| SPR6DATA | 174 | W | Sprite 6 image data register A                   |
| SPR6DATB | 176 | W | Sprite 6 image data register B                   |
| SPR7POS  | 178 | W | Sprite 7 Vert-Horiz start position data          |
| SPX7CTL  | 17A | W | Sprite 7 Vert stop position and control data     |
| SPR7DATA | 17C | W | Sprite 7 image data register A                   |
| SPR7DATB | 17E | W | Sprite 7 image data register B                   |
| COLORxx  | 180 | W | Color table xx (32 WORD ENTRIES, START COLOR 00) |

## Appendix K

# Skeleton Device, Skeleton Library

This appendix contains source code for a skeleton device and a skeleton library. You can use this code to create your own custom devices and libraries to add to the Amiga.

```
************
       Copyright (C) 1985, Commodore Amiga Inc. All rights reserved.
* asmsupp.i -- random low level assembly support routines
* Source Control
* $Header: asmsupp.i,v 31.1 85/10/13 23:12:33 neil Exp $
* $Locker: $
**************
CLEAR
      MACRO
                    ; quick way to clear a D register on 68000
       MOVEQ #0,\1
       ENDM
BHS
      MACRO
      BCC.\0 \1
ENDM
BLO
       MACRO
       BCS.\0 \1
       ENDM
EVEN
       MACRO
                   ; word align code stream
       DS.W
             0
       ENDM
      MACRO ; link to a library without having to see a _LVO LINKLIB _LVO\1,\2
LINKSYS MACRO
       ENDM
CALLSYS MACRO
                   ; call a library without having to see _LVO
       CALLLIB _LVO\1
      ENDM
XLIB
      MACRO
                    ; define a library reference without the _LVO
             _LVO\1
      XREF
      ENDM
```

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ENDM

```
* Copyright (C) 1985, Commodore Amiga Inc. All rights reserved. *
**********
* mylib.i -- external declarations for skeleton library
* SOURCE CONTROL
* $Header: ramlib.i,v 31.1 85/10/13 23:12:51 neil Exp $
* $Locker: neil $
; library function definitions
   LIBINIT
   LIBDEF
              MLFUNCO
   LIBDEF
              MLFUNC1
 library data structures
   STRUCTURE MyLib, LIB_SIZE
       ULONG ml_SysLib
       ULONG
              ml_DosLib
       ULONG ml_SegList
       UBYTE ml_pad
       UBYTE ml_pad
LABEL MyLib_Sizeof
MYLIBNAME
              MACRO
              DC.B
                     'mylib.library',0
```

Alert

XLIB

```
*************
       Copyright (C) 1985, Commodore Amiga Inc. All rights reserved.
* mylib.asm -- skeleton library code
* Source Control
* $Header: amain.asm,v 31.3 85/10/18 19:04:04 neil Exp $
* $Locker: neil $
* $Log: amain.asm,v $
************
        SECTION section
       NOLIST
        include "exec/types.i" include "exec/nodes.i" include "exec/lists.i"
        include "exec/libraries.i"
include "exec/alerts.i"
include "exec/initializers.i"
        include "exec/resident.i" include "libraries/dos.i"
        include "asmsupp.i"
        include "mylib.i"
        LIST
        ;----- These don't have to be external, but it helps some
         ----- debuggers to have them globally visible
        XDEF
                Init
        XDEF
                Open
                Close
        XDEF
                Expunge
        XDEF
        XDEF
                Null
        XDEF
                myName
                MyFunc0
        XDEF
        XDEF
                MyFunc1
        XREF.
                _AbsExecBase
                OpenLibrary
        XLIB
                CloseLibrary
        XLIB
```

XLIB FreeMem XLIB Remove

```
; The first executable location. This should return an error
           ; in case someone tried to run you as a program (instead of
          ; loading you as a library).
Start:
          CLEAR
          rts
; A romtag structure. Both "exec" and "ramlib" look for ; this structure to discover magic constants about you
 ; (such as where to start running you from...).
          ; Most people will not need a priority and should leave it at zero.
          ; the RT_PRI field is used for configuring the roms. Use "mods" from
           wack to look at the other romtags in the system
MYPRI
initDDescrip:
                                                   ;STRUCTURE RT, 0
                                                  ; UWORD RT_MATCHWORD
; APTR RT_MATCHTAG
; APTR RT_ENDSKIP
; UBYTE RT_FLAGS
; UBYTE RT_VERSION
            DC.W
                      RTC_MATCHWORD
                       initDDescrip
            DC.L
             DC.L
                       EndCode
             DC.B
                       RTF_AUTOINIT
             DC.B
                       VERSION
                                                   ; UBYTE RT_VERSION
; UBYTE RT_TYPE
; BYTE RT_PRI
; APTR RT_NAME
; APTR RT_IDSTRING
; APTR RT_INIT
; LABEL RT_SIZE
             DC.B
                       NT_LIBRARY
            DC.B
                       MYPRI
                       myName
            DC.L
             DC.L
                       idString
             DC.L
                       Init
          ; this is the name that the library will have
myName:
                    MYLIBNAME
          ; a major version number.
VERSION:
                    EQU
          ; A particular revision. This should uniquely identify the bits in the
          ; library. I use a script that advances the revision number each time
          ; I recompile. That way there is never a question of which library
          ; that really is.
REVISION:
                    EQU
          ; this is an identifier tag to help in supporting the library; format is 'name version.revision (dd MON yyyy)', <cr>, <lf>, <null> dc.b 'mylib 1.0 (31 Oct 1985)', 13, 10, 0
idString:
dosName:
                    DOSNAME.
```

```
; force word allignment
         ds.w
         ; The romtag specified that we were "RTF_AUTOINIT". This means
         ; that the RT_INIT structure member points to one of these
; tables below. If the AUTOINIT bit was not set then RT_INIT
          ; would point to a routine to run.
Init:
                   MyLib_Sizeof
                                                ; data space size
         DC.L
                                                 ; pointer to function initializers
                   funcTable
dataTable
         DC.L
                                                ; pointer to data initializers
         DC.L
                   initRoutine
                                                 : routine to run
         DC.L
funcTable:
          ;---- standard system routines
          dc.1
                   Open
          dc.1
                    Close
          dc.1
                   Expunge
                   Null
          dc.1
          ;---- my libraries definitions
                   MyFunc0
          dc.1
          dc.1
                   MyFunc1
          ;----- function table end marker
          dc.1
                   -1
          ; The data table initializes static data structures.
          The format is specified in exec/InitStruct routine's manual pages. The INITBYTE/INITWORD/INITLONG routines are in the file "exec/initializers.i". The first argument is the offset from the library base for this byte/word/long.
          The second argument is the value to put in that cell.
          ; The table is null terminated
dataTable:
                              LH_TYPE,NT_LIBRARY
          INITBYTE
          INITLONG
                             LN_NAME, myName
                             LIB_FLAGS, LIBF_SUMUSED!LIBF_CHANGED
          INITBYTE
                             LIB_VERSION, VERSION
          INITWORD
                              LIB_REVISION, REVISION
          INITWORD
                             LIB_IDSTRING, idString
          INITLONG
          DC.L 0
          ; This routine gets called after the library has been allocated. ; The library pointer is in DO. The segment list is in AO.
          ; If it returns non-zero then the library will be linked into
           ; the library list.
initRoutine:
          ;----- get the library pointer into a convenient A register
```

```
move.l a5,-(sp) move.l d0,a5
          ;----- save a pointer to exec move.l a6,ml_SysLib(a5)
          ;----- save a pointer to our loaded code move.1 a0,ml_SegList(a5)
           ;---- open the dos library
          lea
                    dosName (pc), a1
          CLEAR
                    d0
          CALLSYS OpenLibrary
          move.l d0,ml_DosLib(a5)
bne.s 1$
            ----- can't open the dos! what gives
          ALERT AG_OpenLib!AO_DOSLib
1$:
          ;---- now build the static data that we need
          ; put your initialization here...
          move.l a5,d0
          move.1 (sp) +, a5
          rts
;------
; here begins the system interface commands. When the user calls
 OpenLibrary/CloseLibrary/RemoveLibrary, this eventually gets translated; into a call to the following routines (Open/Close/Expunge). Exec; has already put our library pointer in A6 for us. Exec has turned; off task switching while in these routines (via Forbid/Permit), so
  we should not take too long in them.
;------
          ; Open returns the library pointer in d0 if the open
          ; was successful. If the open failed then null is returned.; It might fail if we allocated memory on each open, or; if only open application could have the library open
          ; at a time...
Open:
                    ; (libptr:a6, version:d0)
          ;----- mark us as having another opener
          addq.w #1,LIB_OPENCNT(a6)
          ;----- prevent delayed expunges bclr #LIBB_DELEXP,ml_Flags(a6)
```

```
move.l a6,d0
        rts
        ; There are two different things that might be returned from
        ; the Close routine. If the library is no longer open and
        ; there is a delayed expunge then Close should return the
        ; segment list (as given to Init). Otherwise close should
        ; return NULL.
                 ; (libptr:a6)
Close:
        ;---- set the return value
               đ0
        CLEAR
        ;----- mark us as having one fewer openers subq.w #1,LIB_OPENCNT(a6)
        ;---- see if there is anyone left with us open
        bne.s 1$
         ;----- see if we have a delayed expunge pending
        btst
                 #LIBB_DELEXP, ml_Flags (a6)
        beq.s
                 1$
        ;---- do the expunge
        bsr
                Expunge
1$:
        rts
        ; There are two different things that might be returned from
        ; the Expunge routine. If the library is no longer open
        ; then Expunge should return the segment list (as given to ; Init). Otherwise Expunge should set the delayed expunge
         ; flag and return NULL.
         ; One other important note: because Expunge is called from
         ; the memory allocator, it may NEVER Wait() or otherwise
         ; take long time to complete.
Expunge:
                 ; (libptr: a6)
        movem.1 d2/a5/a6,-(sp)
        move.1 a6,a5
move.1 ml_SysLib(a5),a6
         ;---- see if anyone has us open
         tst.w LIB_OPENCNT(a5)
        beq
         ;----- it is still open. set the delayed expunge flag
                 #LIBB_DELEXP, ml_Flags (a5)
         bset
         CLEAR
                 d0
                 Expunge_End
         bra.s
```

```
1$:
         ;----- go ahead and get rid of us. Store our seglist in d2
        move.l ml_SegList(a5),d2
        ;----- unlink from library list move.l a5,a0
        CALLSYS Remove
        ; device specific closings here...
        ;----- close the dos library
move.1 ml_DosLib(a5),al
CALLSYS CloseLibrary
        ;----- free our memory move.1 a5,a1 move.1 LIB_NEGSIZE(a5),d0
        sub.1 d0,a1
add.1 LIB_POSSIZE(a5),d0
        CALLSYS FreeMem
        ;----- set up our return value move.1 d2,d0
Expunge_End:
        movem.1 (sp) + , d2/a5/a6
        rts
Null:
        CLEAR d0
        rts
; here begins the library specific commands
}------
MyFunc0:
        CLEAR
               d0
        rts
MyFunc1:
        moveq
                 #1,d0
        ; EndCode is a marker that show the end of your code.
        ; Make sure it does not span sections nor is before the
         ; rom tag in memory! It is ok to put it right after
        ; the rom tag -- that way you are always safe. I put
```

; it here because it happens to be the "right" thing ; to do, and I know that it is safe in this case. EndCode:

END

```
Copyright (C) 1985, Commodore Amiga Inc. All rights reserved.
**********************
* mydev.asm -- skeleton device code
* Source Control
* $Header: amain.asm,v 31.3 85/10/18 19:04:04 neil Exp $
* $Locker: neil $
* $Log: amain.asm,v $
SECTION section
       NOLIST
       include "exec/types.i"
include "exec/nodes.i"
include "exec/lists.i"
       include "exec/lists.1"
include "exec/libraries.1"
include "exec/devices.1"
include "exec/io.1"
       include "exec/10.1"
include "exec/alerts.i"
include "exec/initializers.i"
include "exec/memory.i"
       include "exec/resident.i"
       include "exec/ables.i"
       include "exec/errors.i" include "libraries/dos.i"
       include "libraries/dosextens.i"
       include "asmsupp.i"
       include "mydev.i"
       LIST
       ;---- These don't have to be external, but it helps some
        ;----- debuggers to have them globally visible
       XDEF
               Init
       XDEF
               Open
       XDEF
               Close
       XDEF
               Expunge
       XDEF
               Null
       XDEF
               myName
       XDEF
               BeginIO
       XDEF
               AbortIO
```

\_AbsExecBase

XREF

```
OpenLibrary
         XLIB
                   CloseLibrary
         XLIB
         XLIB
                   Alert
                   FreeMem
         XLIB
         XLIB
                   Remove
         XLIB
                  FindTask
                   AllocMem
         XLIB
                   CreateProc
         XLIB
         XLIB
                  PutMsg
         XLIB
                  RemTask
         XLIB
                   ReplyMsg
         XLIB
                   Signal
                   GetMsg
         XLIB
         XLIB
                   Wait
         XLIB
                  WaitPort
                 AllocSignal
SetTaskPri
         XLIB
         XLIB
         INT_ABLES
         ; The first executable location. This should return an error ; in case someone tried to run you as a program (instead of
          ; loading you as a library).
FirstAddress:
         CLEAR
         rts
; A romtag structure. Both "exec" and "ramlib" look for
; this structure to discover magic constants about you
; (such as where to start running you from...).
          ; Most people will not need a priority and should leave it at zero.
          ; the RT_PRI field is used for configuring the roms. Use "mods" from
          ; wack to look at the other romtags in the system
MYPRI
         EQU
initDDescrip:
                                               ;STRUCTURE RT, 0
                                               ; UWORD RT_MATCHWORD
; APTR RT_MATCHTAG
; APTR RT_ENDSKIP
; UBYTE RT_FLAGS
; UBYTE RT_VERSION
; UBYTE RT_TYPE
; BYTE RT_PRI
; APTR RT NAME
                   RTC_MATCHWORD
                     initDDescrip
            DC.L
                      EndCode
                      RTF_AUTOINIT
            DC.B
            DC.B
                     NT_DEVICE
                      VERSION
            DC.B
            DC.B
                      MYPRI
                                               ; APTR RT_NAME
; APTR RT_IDSTRING
; APTR RT_INIT
; LABEL RT_SIZE
                      myName
            DC.L
                      idString
            DC.L
            DC.L
                      Init
```

```
; this is the name that the device will have
subSysName:
myName:
                    MYDEVNAME
; a major version number.
VERSION: FOUR
          ; A particular revision. This should uniquely identify the bits in the ; device. I use a script that advances the revision number each time
          ; I recompile. That way there is never a question of which device
          ; that really is.
REVISION:
                    EQU
          ; this is an identifier tag to help in supporting the device
; format is 'name version.revision (dd MON yyyy)', <cr>, <lf>, <null>
g: dc.b 'mydev 1.0 (31 Oct 1985)', 13,10,0
idString:
dosName:
                    DOSNAME
          ; force word allignment
          ds.w
                    Ω
          ; The romtag specified that we were "RTF_AUTOINIT". This means
          ; that the RT_INIT structure member points to one of these
          ; tables below. If the AUTOINIT bit was not set then RT_INIT
          ; would point to a routine to run.
Init:
         DC.L
                    MyDev_Sizeof
                                                  ; data space size
                    funcTable
          DC.L
                                                  ; pointer to function initializers
          DC.L
                    dataTable
                                                   ; pointer to data initializers ; routine to run
                    initRoutine
funcTable:
          ;---- standard system routines
          dc.1
                    Open
         dc.1
                    Close
         dc.1
                    Expunge
         dc.1
                    Null
         ;---- my device definitions
         dc.1
                   BeginIO
         dc.1
                   AbortIO
          ;----- function table end marker
         dc.1
         ; The data table initializes static data structures.
         ; The format is specified in exec/InitStruct routine's ; manual pages. The INITBYTE/INITWORD/INITLONG routines ; are in the file "exec/initializers.i". The first argument
```

```
; is the offset from the device base for this byte/word/long.
         ; The second argument is the value to put in that cell.
          ; The table is null terminated
dataTable:
                             LH_TYPE, NT_DEVICE
         INITBYTE
                             LN_NAME, myName
         INITLONG
                             LIB_FLAGS, LIBF_SUMUSED!LIBF_CHANGED
         INITBYTE
                             LIB_VERSION, VERSION
         INITWORD
                             LIB_REVISION, REVISION
          INITWORD
         INITLONG
                             LIB_IDSTRING, idString
         DC.L
         ; This routine gets called after the device has been allocated. ; The device pointer is in DO. The segment list is in aO.
          ; If it returns non-zero then the device will be linked into
           the device list.
initRoutine:
         ;----- get the device pointer into a convenient A register move.1 a5,-(sp) move.1 d0,a5
          ;---- save a pointer to exec
         move.l a6, md_SysLib(a5)
         ;----- save a pointer to our loaded code move.l a0,md_SegList(a5)
          ;---- open the dos library
                  dosName (pc), al
          lea
                  d0
          CLEAR
          CALLSYS OpenLibrary
          move.l d0,md_DosLib(a5)
bne.s init_DosOK
          ;----- can't open the dos! what gives ALERT AG_OpenLib!AO_DOSLib
init_DosOK:
          ;----- now build the static data that we need
          ; put your initialization here...
          move.l a5,d0
move.l (sp)+,a5
          rts
; here begins the system interface commands. When the user calls
; OpenLibrary/CloseLibrary/RemoveLibrary, this eventually gets translated ; into a call to the following routines (Open/Close/Expunge). Exec
```

```
; has already put our device pointer in a6 for us. Exec has turned
; off task switching while in these routines (via Forbid/Permit), so; we should not take too long in them.
,
         ; Open sets the IO_ERROR field on an error. If it was successfull, ; we should set up the IO_UNIT field.
         ; ( device:a6, iob:a1, unitnum:d0, flags:d1 ) movem.1 d2/a2/a3/a4,-(sp)
Open:
         move.l al,a2
                                    ; save the iob
         ;---- see if the unit number is in range
         moveq #MD_NUMUNITS,d2
                 d2,d0
         cmp.1
         bcc.s Open_Error
                                   ; unit number out of range
         ;---- see if the unit is already initialized
         move.1 d0,d2
                                   ; save unit number
         lsl.l
                 #2,d0
md_Units(a6,d0.1),a4
         lea.l
        move.1 (a4),d0
bne.s Open_UnitOK
         ;---- try and conjure up a unit
        bsr InitUnit
        ;----- see if it initialized OK move.1 (a4),d0 beq.s Open_Error
Open_UnitOK:
        move.1 d0,a3
                                   ; unit pointer in a3
        move.1 d0, IO_UNIT(a2)
        ;----- mark us as having another opener addq.w #1,LIB_OPENCNT(a6) addq.w #1,UNIT_OPENCNT(a3)
         ;----- prevent delayed expunges
        bclr
                 #LIBB_DELEXP, md_Flags (a6)
Open_End:
        movem.1 (sp) + d2/a2/a3/a4
Open_Error:
        move.b #IOERR_OPENFAIL, IO_ERROR(a2)
        bra.s Open_End
         ; There are two different things that might be returned from
```

```
; the Close routine. If the device is no longer open and
           ; there is a delayed expunge then Close should return the
           ; segment list (as given to Init). Otherwise close should
           ; return NULL.
          ; ( device:a6, iob:a1 ) movem.1 a2/a3,-(sp)
Close:
          move.l al,a2
          move.1 IO_UNIT(a2),a3
           :---- make sure the iob is not used again
          moveq.1 #-1,d0
          move.1 d0, IO_UNIT(a2)
move.1 d0, IO_DEVICE(a2)
          ;----- see if the unit is still in use subq.w #1,UNIT_OPENCNT(a3) bne.s Close_Device
          bsr
                     ExpungeUnit
Close_Device:
           ;----- mark us as having one fewer openers
           subq.w #1,LIB_OPENCNT(a6)
           ;----- see if there is anyone left with us open
          bne.s Close_End
           ;----- see if we have a delayed expunge pending btst #LIBB_DELEXP.md_Flags(a6)
           btst
           beq.s
                     Close_End
           ;----- do the expunge
           bsr
                     Expunge
Close_End:
          movem.1 (sp) + ,a2/a3
           ; There are two different things that might be returned from ; the Expunge routine. If the device is no longer open
           ; then Expunge should return the segment list (as given to ; Init). Otherwise Expunge should set the delayed expunge ; flag and return NULL.
           ; One other important note: because Expunge is called from ; the memory allocator, it may NEVER Wait() or otherwise
           ; take long time to complete.
                      ; (device: a6)
Expunge:
           movem.1 d2/a5/a6,-(sp) move.1 a6,a5
```

```
move.l md_SysLib(a5),a6
           ;---- see if anyone has us open
           tst.w LIB_OPENCNT(a5)
           beq
                      1$
           ;---- it is still open. set the delayed expunge flag
           bset #LIBB_DELEXP, md_Flags (a5)
           CLEAR
                    d0
           bra.s Expunge_End
1$:
          ;----- go ahead and get rid of us. Store our seglist in d2 move.l md\_SegList(a5),d2
          ;----- unlink from device list
move.l a5,a0
CALLSYS Remove
           ; device specific closings here...
          ;----- close the dos library
move.1 md_DosLib(a5),al
CALLSYS CloseLibrary
          ;----- free our memory
move.1 a5,a1
move.1 LIB_NEGSIZE(a5),d0
          sub.1 d0,a1
          add.1 LIB_POSSIZE(a5),d0
          CALLSYS FreeMem
          ;----- set up our return value move.l d2,d0
Expunge_End:
          movem.1 (sp) + d2/a5/a6
Null:
          CLEAR d0
          rts
          t: ; ( d2:unit number, a3:scratch, a6:devptr )
movem.l d2/d3/d4,-(sp)
InitUnit:
          ;----- allocate unit memory
move.l #MyDevUnit_Sizeof,d0
move.l #MEMF_PUBLIC!MEMF_CLEAR,d1
LINKSYS AllocMem,md_SysLib(a6)
```

```
tst.l
                   d0
                  InitUnit_End
         peq
        move.1 d0,a3
move.b d2,mdu_UnitNum(a3)
                                               ; initialize unit number
         ;----- start up the unit process. We do a trick here --
         we set his message port to PA_IGNORE until the new process has a change to set it up.

We cannot go to sleep here: it would be very nasty
         :---- if someone else tried to open the unit
         ;----- (exec's OpenDevice has done a Forbid() for us --
         ;---- we depend on this to become single threaded).
                                               ; stack size
         move.1 #MYPROCSTACKSIZE,d4
                                                 ; segment list
         move.1 #myproc_seglist,d3
                                                 ; change to bcpl pointer
         lsr.l
                   #2,d3
         moveq #MYPROCPRI,d2 move.l #myName,d1
                                                 ; pick out its priority
                                                  name is the device's
         LINKSYS CreateProc, md_DosLib (a6)
         tst.1
                   d0
                   InitUnit_FreeUnit
         beq
         ;----- set up the unit structures for the new process move.1 d0,mdu_Process(a3) move.1 d0,a0
         lea -pr_MsgPort(a0),a0
move.1 a0,MP_SIGTASK(a3)
move.b #PA_IGNORE,MP_FLAGS(a3)
          ;----- send a startup message to the new process
         lea mdu_Msg(a3),al
         move.1 a3,mcm_Unit(a1)
move.1 a6,mcm_Device(a1)
move.1 d0,a0
                                                 ; message port is new process port
         LINKSYS PutMsg, md_SysLib (a6)
         ;----- mark us as ready to go
         move.1 d2,d0 ; unit number 1s1.1 #2,d0 ; unit number a3,md_Units(a6,d0.1) ; set unit table
InitUnit_End:
         movem.1 (sp) + , d2/d3/d4
          ;----- got an error. free the unit structure that we allocated.
InitUnit_FreeUnit:
                 FreeUnit
          bsr
         bra.s InitUnit_End
                  ; ( a3:unitptr, a6:deviceptr )
FreeUnit:
         move.l a3,a1
move.l #MyDevUnit_Sizeof,d0
```

```
LINKSYS FreeMem, md_SysLib (a6)
ExpungeUnit: ; ( a3:unitptr, a6:deviceptr )
    move.l d2,-(sp)
        ;---- get rid of the unit's task. We know this is safe
        ;----- because the unit has an open count of zero, so it
        ;---- is 'guaranteed' not in use.
        move.l mdu_Process(a3),a1
lea - (pr_MsgPort)(a1),a1
        LINKSYS RemTask, md_SysLib (a6)
        ;---- save the unit number
        CLEAR d2
move.b mdu_UnitNum(a3),d2
        ;----- free the unit structure.
bsr FreeUnit
        bsr
       ;----- clear out the unit vector in the device ls1.1 #2,d2 clr.1 md_Units(a6,d2.1)
        move.1 (sp)+,d2
        rts
;------
; here begins the device specific functions
,
;------
; cmdtable is used to look up the address of a routine that will
; implement the device command.
cmdtable:
       DC.L
                Invalid
                               ; $0000001
        DC.L
                               ; $00000002
               MyReset
                               ; $0000004
; $0000008
        DC.L
               Read
        DC.L
                Write
        DC.L
                Update
                               ; $00000010
                               ; $00000020
        DC.L
                Clear
        DC.L
                               ; $00000040
               MyStop
        DC.L
               Start
                               ; $00000080
                               ; $00000100
        DC.L
               Flush
        DC.L
               Foo
                                ; $00000200
        DC.L
               Bar
                               ; $00000400
cmdtable_end:
; this define is used to tell which commands should not be queued
; command zero is bit zero.
; The immediate commands are Invalid, Reset, Stop, Start, Flush
IMMEDIATES
               EQU $000001c3
```

```
; BeginIO starts all incoming io. The IO is either queued up for the
; unit task or processed immediately.
        ; (iob: al, device:a6)
move.l a3,-(sp)
BeginIO:
        ;---- bookkeeping move.1 IO_UNIT(a1),a3
         ;---- see if the io command is within range
        move.w IO_COMMAND(a1),d0
cmp.w #MYDEV_END,d0
bcc.s BeginIO_NoCmd
        DISABLE a0
        ;----- process all immediate commands no matter what move.w #IMMEDIATES,dl
        btst d0,d1
bne.s BeginIO_Immediate
         ;---- see if the unit is STOPPED. If so, queue the msg.
        btst #MDUB_STOPPED,UNIT_FLAGS(a3)
bne.s BeginIO_QueueMsg
         ;----- this is not an immediate command. see if the device is
         :---- busy.
        bset #UNITB_ACTIVE, UNIT_FLAGS (a3)
        beq.s BeginIO_Immediate
         ;----- we need to queue the device. mark us as needing
         ;----- task attention. Clear the quick flag
BeginIO_QueueMsg:
               #UNITB_INTASK, UNIT_FLAGS (a3)
        BSET
                #IOB_QUICK, IO_FLAGS (a1)
        bclr
        ENABLE a0
        move.l a3,a0
        LINKSYS PutMsg, md_SysLib (a6)
        bra.s BeginIO_End
BeginIO_Immediate:
        ENABLE a0
        bsr
                 PerformIO
BeginIO_End:
         move.1 (sp)+,a3
         rts
BeginIO_NoCmd:
         move.b #IOERR_NOCMD, IO_ERROR (a1)
         bra.s BeginIO_End
```

ڏھ

```
; PerformIO actually dispatches an io request. It expects a3 to already ; have the unit pointer in it. a6 has the device pointer (as always).
; al has the io request. Bounds checking has already been done on
; the io request.
         IO:    ; (iob:a1, unitptr:a3, devptr:a6)
move.1 a2,-(sp)
move.1 a1,a2
PerformIO:
         move.w IO_COMMAND(a2),d0
         lea
                  cmdtable (pc), a0
         move.1 0(a0,d0.w),a0
         jsr
                   (a0)
         move.l (sp)+,a2
         rts
; TermIO sends the IO request back to the user. It knows not to mark
; the device as inactive if this was an immediate request or if the
; request was started from the server task.
         ; (iob:a1, unitptr:a3, devptr:a6)
move.w IO_COMMAND(a1),d0
move.w #IMMEDIATES,d1
TermIO:
         btst
                  d0,d1
         bne.s
                  TermIO_Immediate
         ;----- we may need to turn the active bit off. btst #UNITB_INTASK,UNIT_FLAGS(a3) bne.s TermIO_Immediate
         btst
         bne.s
         ;----- the task does not have more work to do bclr #UNITB_ACTIVE,UNIT_FLAGS(a3)
         bclr
TermIO_Immediate:
         ;---- if the quick bit is still set then we don't need to reply
         ;---- msg -- just return to the user.
                  #IOB_QUICK, IO_FLAGS (a1)
         btst
                  TermIO_End
         bne.s
         LINKSYS ReplyMsg, md_SysLib (a6)
TermIO_End:
         rts
AbortIO:
            ; (iob: al, device:a6)
;-----
```

```
here begins the functions that implement the device commands
; all functions are called with:
         al -- a pointer to the io request block a2 -- another pointer to the iob
         a3 -- a pointer to the unit
         a6 -- a pointer to the device
; Commands that conflict with 68000 instructions have a "My" prepended
; to them.
Invalid:
         move.b #IOERR_NOCMD, IO_ERROR (a1)
                  TermIO
         rts
MyReset:
         ; !!! fill me in !!!
         ; !!! fill me in !!!
; !!! fill me in !!!
; !!! fill me in !!!
; the Read command acts as an infinite source of nulls. It clears
; the user's buffer and marks that many bytes as having been read.
Read:
         move.1 IO_DATA(a1),a0
move.1 IO_LENGTH(a1),d0
move.1 d0,IO_ACTUAL(a1)
         ;----- deal with a zero length read beq.s Read_End
         ;---- now copy the data CLEAR d1
Read_Loop:
         move.b d1, (a0) + subq.1 #1, d0
         bne.s Read_Loop
Read_End:
                   TermIO
         bsr
         rts
  the Write command acts as bit bucket. It clears acknowledges all
; the bytes the user has tried to write to it.
```

```
Write:
```

move.l IO\_LENGTH(a1), IO\_ACTUAL(a1)

bsr TermIO

rts

; Update and Clear are internal buffering commands. Update forces all ; io out to its final resting spot, and does not return until this is ; done. Clear invalidates all internal buffers. Since this device ; has no internal buffers, these commands do not apply.

# Update:

Clear:

bra Invalid

; the Stop command stop all future io requests from being ; processed until a Start command is received. The Stop ; command is NOT stackable: e.g. no matter how many stops ; have been issued, it only takes one Start to restart ; processing.

### MyStop:

bset #MDUB\_STOPPED, UNIT\_FLAGS (a3)

bsr TermIO

rts

#### Start:

> مر

bsr InternalStart

move.l a2,a1 bsr TermIO

rts

## InternalStart:

;----- turn processing back on bclr #MDUB\_STOPPED,UNIT\_FLAGS(a3)

;----- kick the task to start it moving

move.l a3,a1

CLEAR d0

move.1 MP\_SIGBIT(a3),d1

bset d1,d0

LINKSYS Signal, md\_SysLib(a3)

rts

; Flush pulls all io requests off the queue and sends them back. ; We must be careful not to destroy work in progress, and also ; that we do not let some io requests slip by.

```
; Some funny magic goes on with the STOPPED bit in here. Stop is
; defined as not being reentrant. We therefore save the old state ; of the bit and then restore it later. This keeps us from ; needing to DISABLE in flush. It also fails miserably if someone
; does a start in the middle of a flush.
Flush:
           movem.1 d2/a6, -(sp)
           move.l md_SysLib(a6),a6
                      #MDUB_STOPPED, UNIT_FLAGS (a3)
           bset
                      d2
           sne
Flush_Loop:
           move.l a3,a0
           CALLSYS GetMsq
                      d0
           tst.1
                     Flush_End
           beq.s
           move.1 d0,a1
move.b #IOERR_ABORTED,IO_ERROR(a1)
CALLSYS ReplyMsg
           bra.s Flush_Loop
Flush_End:
           move.l d2,d0
           movem.1 (sp) + d2/a6
                       d0
            tst.b
           beq.s
                       1$
            bsr
                       InternalStart
 1$:
            move.l a2,a1
                       TermIO
            bsr
            rts
 ; Foo and Bar are two device specific commands that are provided just ; to show you how to add your own commands. The currently return that ; no work was done.
 Foo:
 Bar:
            CLEAR
                       d0
            move.1 d0, IO_ACTUAL(a1)
```

```
bsr
                  TermIO
         rts
; here begins the process related routines
; A Process is provided so that queued requests may be processed at
; a later time.
; Register Usage
; a3 -- unit pointer
; a6 -- syslib pointer
 ; a5 -- device pointer
; a4 -- task (NOT process) pointer
; d7 -- wait mask
; some dos magic. A process is started at the first executable address; after a segment list. We hand craft a segment list here. See the
; the DOS technical reference if you really need to know more about this.
         cnop
                 0,4
                                             ; long word allign
         DC.L
                 16
                                             ; segment length -- any number will do
myproc_seglist:
        DC.L
                                             ; pointer to next segment
; the next instruction after the segment list is the first executable address
Proc_Begin:
         move.l _AbsExecBase,a6
         ;----- wait for our first packet
         SUB.L al,al
                                            ; <my task> = FindTask(0)
         CALLSYS FindTask
        move.l d0,a0 move.l d0,a4
                                             ; save task in a4
        lea pr_MsgPort(a0),a0
CALLSYS WaitPort
                                            ; get msg port for my processes
        ;----- take msg off the port
move.l d0,al
move.l d0,a2
CALLSYS Remove
                                             ; save the message
        ;----- get our parameters out of it
move.l mdm_Device(a2),a5
move.l mdm_Unit(a2),a3
                                                      ; a5 is now our device
```

; -1 is any signal at all

;----- Allocate the right signal

moveq #-1,d0 CALLSYS AllocSignal

```
move.b d0,MP_SIGBIT(a3)
move.b #PA_SIGNAL,MP_FLAGS(a3)
          ;----- change the bit number into a mask, and save in d7
          CLEAR d7
         bset
                  d0,d7
         ;----- OK, kids, we are done with initialization. We now ;----- can start the main loop of the driver. It goes ;----- like this. Because we had the port marked PA_IGNORE
          ;----- for a while (in InitUnit) we jump to the getmsg
         ;----- code on entry.
                            wait for a message
                            lock the device
                            get a message. if no message unlock device and loop
                            dispatch the message
          ;----
                            loop back to get a message
          ;----
         bra.s Proc_CheckStatus
          ;----- main loop: wait for a new message
Proc_MainLoop:
         move.1 d7,d0
         CALLSYS Wait
Proc_CheckStatus:
         ;----- see if we are stopped
btst #MDUB_STOPPED,UNIT_FLAGS(a3)
bne.s Proc_MainLoop ; de
                                              ; device is stopped
          ;----- lock the device
         bset #UNITB_ACTIVE,UNIT_FLAGS(a3)
bne.s Proc_MainLoop ; de
                                              ; device in use
          ;----- get the next request
Proc_NextMessage:
         move.l a3,a0
         CALLSYS GetMsg
         tst.1 d0
beq.s Proc_Unlock
                                              ; no message?
         ;----- do this request
         move.l d0,a1
         exq
               as, ac
PerformIO
                  a5,a6
                                              ; put device ptr in right place
         bsr
                 a5,a6
         exg
                                              ; get syslib back in a6
         bra.s Proc_NextMessage
          ;---- no more messages. back ourselves out.
Proc_Unlock:
```

منتصر

and.b #\$ff&(UNITB\_ACTIVE!UNITB\_INTASK),UNIT\_FLAGS(a3)
bra Proc\_MainLoop

#### Proc\_Fail:

;----- we come here on initialization failures bsr FreeUnit rts

; EndCode is a marker that show the end of your code.
; Make sure it does not span sections nor is before the
; rom tag in memory! It is ok to put it right after
; the rom tag -- that way you are always safe. I put
; it here because it happens to be the "right" thing
; to do, and I know that it is safe in this case.

EndCode:

END

# Appendix L

# **Disk Format Information**

This appendix contains information useful to the developer who desires to take over the entire machine. That is, rather than use AmigaDOS to load the code, the application is to boot directly after Kickstart, not using AmigaDOS or Intuition. This appendix provides two pieces of information: the disk boot block format, and the format of the actual data on disk.

#### THE BOOT PROCESS

The first two sectors are read into the system at an arbitrary position; therefore, the code MUST be PC-relative. The first three longwords are as in devices/bootblock.h. The type should be BBID\_DOS; the checksum must be correct (as in additive carry wraparound sum of 0xffffffff). Execution starts at location 12 of the sectors that were read in.

The code is called with an open disk I/O request in Al (see the TrackDisk chapter for the format of this IORequest block). The boot code is free to use it as it wishes (it may trash Al, but must not trash the io block itself).

The boot code returns two values: D0 and A0. D0 is a failure code -- if it is non-zero then a system alert will be called, then the boot code falls into the debugger.

If D0 is null then A0 contains the start address to jump to. The strap module will free the boot sectors, close the I/O block, do any other cleanup that is required, and jump to the location pointed to by A0.

#### COMMODORE-AMIGA DISK FORMAT

The following are details about how the bits on the Commodore-Amiga disk are actually written.

Gross Data Organization:

3 1/2 inch disk double-sided 80 cylinders/160 tracks

## Per-track Organization:

Nulls written as a gap, then 11 sectors of data. No gaps written between sectors.

#### Per-sector Organization:

All data is MFM encoded. This is the pre-encoded contents of each sector:

[above 4 bytes treated as one longword for purposes of MFM encoding]

16 bytes of OS recovery info (NOTE 2)

[treated as a block of 16 bytes for encoding]
four bytes of header checksum

[treated as a longword for encoding]
four bytes of data-area checksum

[treated as a longword for encoding]
512 bytes of data

[treated as a block of 512 bytes for encoding]

#### NOTES:

#### NOTE 1.

The track number and sector number are constant for each particular sector. However, the sector offset byte changes each time we rewrite the track.

The Amiga does a full track read starting at a random position on the track and going for slightly more than a full track read to assure that all data gets into the buffer. The data buffer is examined to determine where the first sector of data begins as compared to the start of the buffer. The track data is block moved to the beginning of the buffer so as to align some sector with the first location in the buffer.

Because we start reading at a random spot, the read data may be divided into three chunks: a series of sectors, the track gap, and another series of sectors. The sector offset value tells the disk software how many more sectors remain before the gap. From this the software can figure out the buffer memory location of the last byte of legal data in the buffer. It can then search past the gap for the next sync byte and, having found it, can block move the rest of the disk data so that all 11 sectors of data are contiguous.

#### Example:

first-ever write of the track from a buffer like this:

<GAP> |sector0|sector1|sector2|....|sector10|

sector offset values:

11 10 9 .... 1

(if I find this one at the start of my read buffer, then I know there are this many more sectors with no intervening gaps before I hit a gap).

sample read of this track:

<junk>|sector9|sector10|<gap>|sector0|...|sector8|<junk>

value of 'sectors till end of write':

 $2 \qquad 1 \qquad \dots \qquad 11 \qquad \qquad 3$ 

result of track realligning:

<GAP>|sector9|sector10|sector0|...|sector8|

new sectors till end of write:

11 10 9 ... 1

so that when the track is rewritten, the sector offsets are adjusted to match the way the data was written.

NOTE 2. This is operating systems dependent data and relates to how AmigaDos assigns sectors to files.

Reserved for future use.

#### **GENERAL:**

When data is MFM encoded, the encoding is performed on the basis of a data block-size. In the sector encoding described above, there are bytes individually encoded; three segments of 4 bytes of data each, treated as longwords; one segment of 16 bytes treated as a block; two segments of longwords for the header and data checksums; and the data area of 512 bytes treated as a block.

When the data is encoded, the odd bits are encoded first, then the even bits of the block.

(Make a block of bytes formed from all odd bits of the block, encode as MFM.

Make a block of bytes formed from all even bits of the block, encode as MFM. Even bits are shifted left one bit position before being encoded.)

```
SOURCE CODE FOR DATA ENCODE/DECODE
```

```
decodeBlock( mfmbuffer, userbuffer, numwords )
                        /* the encoded data */
WORD *mfmbuffer;
                        /* where to put the decoded data */
WORD *userbuffer;
                        /* the number of WORDS of data (not bytes) */
int numwords;
    WORD *oddptr, *evenptr, oddbits, evenbits;
    oddptr = mfmbuffer;
    /* the even region starts right after the odd one */
    evenptr = &mfmbuffer[numwords];
    while( numwords-- > 0 ) {
        /* mask off the mfm clock bits, and shift the word */
        oddbits = ((*oddptr++ << 1) & 0xAAAA);
        /* even bits are already in the right place. Just mask off clock */
        evenbits = ((*evenptr++) \& 0x5555);
        /* recombine the two sections */
        *userbuffer++ = oddbits | evenbits;
    }
}
encodeBlock( mfmbuffer, userbuffer, numwords )
WORD *mfmbuffer;
                        /* where to put the encoded data */
                        /* the user data, before encoding */
WORD *userbuffer;
int numwords;
                        /* the number of WORDS of data (not bytes) */
    WORD *oddptr, *evenptr;
    WORD *ubuf;
    oddptr = mfmbuffer;
    /* the even region starts right after the odd one */
    evenptr = &mfmbuffer[numwords];
    /* mfmencode takes one word of mfm data can correctly sets
     * the clock bits
    /* encode the odd bits */
    for( ubuf = userbuffer, i = numwords; i > 0; i-- ) {
        oddptr++ = mfmencode( (*ubuf++ >> 1) & 0x5555);
    }
    /* encode the even bits */
    for( ubuf = userbuffer, i = numwords; i > 0; i-- ) {
        evenptr++ = mfmencode( *ubuf++ & 0x5555 );
    }
}
```

Commodore Business Machines, Inc. 1200 Wilson Drive, West Chester, PA 19380

Commodore Business Machines, Limited 370 Pharmacy Avenue, Agincourt, Ontario, M1W 2K4

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